



**UNIVERSITY OF  
KWAZULU-NATAL**  
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**CITY MORPHOLOGY AND EFFECTIVE CONTROL MECHANISMS:  
TOWARDS LAND USE OPTIMIZATION AND SUSTAINABLE  
DEVELOPMENT: A CASE STUDY OF LAGOS MEGA CITY**

By

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A Thesis submitted in fulfilment of the academic requirements for the degree of Doctor of Philosophy in Urban and Regional Planning in the School of Built Environment and Development Studies (SOBEDS), Disciplines of Architecture, Planning and Housing, University of KwaZulu-Natal, Durban.

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CITY MORPHOLOGY AND EFFECTIVE CONTROL MECHANISMS:  
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A CASE STUDY OF LAGOS MEGA CITY

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**Professor Emeritus Ambrose A. Adebayo**

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## ABSTRACT

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Rapid urban growth and resultant modifications to the environment have significantly changed urban morphologies. Given the rapid growth of metropolitan Lagos and its constrained access to land, spontaneous, muddled patterns of development have resulted in unsustainable development with varying consequences for the environment and its inhabitants. These have implications for carrying capacity, aesthetics, resources and urban liveability and call for policy formulation and measures to plan and control development patterns.

The hypothesis of the study was underpinned on the argument that land utilization and control of urban spatial growth are functions of adequate planning and effective frameworks in achieving sustainable development. The study provides a framework for assessing urban structure and morphology with a rationale for planning sustainable cities. It reviews the dynamics of urban growth and its complexities alongside planning and design methods and approaches. The study notes that different elements of cities respond to various stimuli that should be taken into account in seeking to achieve sustainable development. Lagos mega city's policies and spatial development strategies have, unfortunately, not done so.

Guided by critical and pragmatic theory, the study employed triangulated mixed methods to assess the morphology and temporal growth of Lagos mega city and the factors that influence it; it examined urban planning frameworks, policies and control mechanisms; implementation, enforcement and compliance. Three study areas (Lagos Island, Apapa and Victoria Island) were purposively selected as case studies and data were collected through onsite surveys and observation; interviews with planners and the administration of questionnaires to property owners.

The findings show that the metropolis is characterized by poor land utilization and ineffective control of urban development which is constrained due to surrounding water bodies and burdened by rapid population growth. The hypotheses tested using the T-Test statistic indicate that while poor land utilization and uncontrolled urban spatial growth are not exclusively a function of poor planning and ineffective frameworks, changing city functions and urban growth have implications for land use that require forward planning.

The study therefore developed the Land Use Optimization and Effective Control Model that encapsulates approaches, process and factors towards compact, mixed-use development for a sustainable urban form. The model will guide planning agencies and development plans to align with the objectives of sustainability.

## DECLARATION- PLAGIARISM

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I, Franca Unekwu Agamah declare that,

- (i) The research reported in this thesis, except where otherwise indicated, is my original work.
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.....  
Date



## **DEDICATION**

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I dedicate this project to my late Father and Aunt, Mr. Peter Sule Idachaba and Miss Eke Victoria Idachaba; they laid the foundation on which I am building.

## ACKNOWLEDGEMENT

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## TABLE OF CONTENTS

<b>ABSTRACT</b> .....	iii
<b>DECLARATION- PLAGIARISM</b> .....	iv
<b>DEDICATION</b> .....	v
<b>ACKNOWLEDGEMENT</b> .....	vi
<b>TABLE OF CONTENTS</b> .....	vii
<b>LIST OF TABLES</b> .....	xii
<b>LIST OF FIGURES</b> .....	xiv
<b>LIST OF PLATES</b> .....	xvii
<b>ABBREVIATIONS AND ACRONYMS</b> .....	xix
<b>DEFINITION OF WORDS</b> .....	xx
<b>CHAPTER ONE</b> .....	1
<b>INTRODUCTION OF STUDY</b> .....	1
1.0 Background Information.....	1
1.1 Approaches of Morphological Studies.....	2
1.2 Problem statement.....	5
1.3 Key question.....	7
1.3.1 Sub-questions.....	7
1.4 Aim.....	7
1.4.1 Objectives .....	7
1.4.2 Hypothesis one.....	8
1.4.3 Hypothesis two.....	8
1.5 Justification for the study/ possible outcome .....	8
1.6 Scope of the study .....	9
1.7 Limitations of the Study.....	10
1.8 Structure and plan of thesis .....	10
<b>CHAPTER TWO</b> .....	13
<b>RESEARCH METHODOLOGY</b> .....	13
2.0 Introduction.....	13
2.1 Epistemology: Guiding paradigms and theories .....	13
2.2 Research Design.....	14
2.3 Instruments and procedure for Data Collection .....	16
2.3.1 Secondary Data .....	16
2.3.2 Primary data .....	16
2.4 Survey Area, Population and Sample Frame/ Size Determination .....	21
2.4.1 Survey Area Delineation.....	21
2.4.2 Property Owners .....	26

2.4.3	Key Informants: Professional Planners In (MPP&UD).....	27
2.5	Data Analysis .....	28
2.6	Pilot Study.....	29
2.7	Research ethics- Confidentiality and consistency.....	30
2.8	Conclusion.....	30
<b>CHAPTER THREE .....</b>		<b>33</b>
<b>THEORETICAL AND CONCEPTUAL FRAMEWORK .....</b>		<b>33</b>
3.0	Introduction.....	33
3.1	Place Theory: Definition and Classification .....	33
3.2	Urban Form Configuration: Linkage, Figure ground and place theories.....	38
3.2.1	The Linkage theory .....	40
3.2.2	The Figure Ground Theory .....	41
3.3	Theories of Cities' spatial structure .....	42
3.3.1	The Concentric Zone Model (Burgess, 1925).....	43
3.3.2	The Sector & Multiple Nuclei City Models.....	47
3.3.3	Bid Rent Theory.....	48
3.3.4	The Central Place Theory .....	50
3.3.5	The Growth Pole Theory .....	51
3.4	Theory of a good city Form; Principles and attributes.....	53
3.5	Concepts and Principles of Urban Design .....	54
3.6	Planning Theory .....	58
3.7	Community Participation and Inclusive Planning.....	59
3.8	Summary of chapter .....	60
3.9	Conclusion.....	62
<b>CHAPTER FOUR.....</b>		<b>63</b>
<b>URBAN SPACE DYNAMICS: THE EVOLUTION OF SPATIAL FORMS.....</b>		<b>63</b>
4.0	Introduction.....	63
4.1	Theories of Urban Origin .....	63
4.2	Morphogenesis and Transformation.....	64
4.2.1	Traditional Urban Form .....	66
4.2.2	Modern urban forms .....	71
4.3	Factors of Forms Evolution.....	77
4.4	Land use and Factors that influence development and forms .....	78
4.4.1	Transportation, urban web principles and land use development.....	79
4.4.2	Land value/market and urban housing.....	80
4.4.3	Population growth and Urbanization .....	81
4.4.4	Rural-urban migration signatures on the urban space.....	82
4.4.5	Social Stratification and Spatial Differentiation .....	84
4.5	Conclusion.....	85

<b>CHAPTER FIVE .....</b>	<b>86</b>
<b>THE CONCEPT, PRINCIPLES AND APPROACHES OF SUSTAINABLE DEVELOPMENT .....</b>	<b>86</b>
5.0 Introduction.....	86
5.1 The Concept of Sustainability .....	86
5.2 Sustainable city form.....	88
5.3 New Urbanism: Philosophies for Sustainable Spatial Development .....	90
5.4 Techniques of Sustainable Spatial Development .....	93
5.4.1 Urban Revitalization - Interventions and case studies.....	95
5.4.2 Planned expansion: Incremental densification - the transect plan.....	98
5.4.3 Neighbourhood plans .....	99
5.4.4 The multiple and intensive land use (MILU) concept .....	100
5.5 Overview of Sustainable Development.....	101
5.6 Conclusion.....	102
<b>CHAPTER SIX .....</b>	<b>103</b>
<b>URBAN PLANNING AND MECHANISMS OF DEVELOPMENT CONTROL .....</b>	<b>103</b>
6.0 Introduction.....	103
6.1 Urban Planning: Traditional and Modern Approaches .....	104
6.1.1 Comprehensive Plan .....	105
6.1.2 Land use planning: Zoning and Urban Land Sub-division.....	106
6.1.3 Development Control and Mechanisms.....	108
6.1.4 Provision for Development Control and Jurisdiction .....	110
6.1.5 Geographic Information Systems (GIS) .....	111
6.1.6 Land use decision and modelling.....	112
6.2 Urban Management and Governance.....	113
6.3 Conclusion.....	114
<b>CHAPTER SEVEN.....</b>	<b>116</b>
<b>URBAN PLANNING AND SPATIAL FORMS IN AFRICA.....</b>	<b>116</b>
7.0 Introduction.....	116
7.1 Urban planning and changing spatial form in Africa.....	116
7.2 Urban Planning in Nigeria.....	120
7.2.1 Urban Planning Administration in Lagos .....	125
7.3 Conclusion.....	131
<b>CHAPTER EIGHT .....</b>	<b>133</b>
<b>CASE STUDY AREA.....</b>	<b>133</b>
8.0 Introduction.....	133
8.1 Background and National Geo-Location.....	133
8.2 Lagos: Port City, Administrative and Economic Hub.....	137
8.2.1 Historical background; Morphology and Development of Lagos Mega City .	141
8.2.2 Urbanization and Demographic Growth Patterns .....	147
8.2.3 Land Use Allocation in Lagos .....	151

8.2.4	Inner City Housing and Urban Land Forms .....	152
<b>8.3</b>	<b>Conclusion.....</b>	<b>155</b>
<b>CHAPTER NINE .....</b>		<b>156</b>
<b>LAND USE MAPPING AND MORPHOLOGICAL ASSESSMENT .....</b>		<b>156</b>
9.0	Introduction.....	156
9.1	Land use and Spatial Expansion of the Lagos Metropolitan City.....	156
9.2	Morphological Assessment of the Three Selected Areas of Lagos Mega City.....	163
9.2.1	Lagos Island- case study one .....	164
9.2.1.1	Spatial Configuration: Plots and Building Patterns.....	169
9.2.1.2	Building Types, Height, Density and Land Utilization.....	173
9.2.1.3	The Road Network Infrastructure and Carrying Capacity .....	176
9.2.1.4	Environmental quality and Condition of Buildings .....	178
9.2.2	Apapa – Case study two.....	182
9.2.2.1	Spatial Configuration: Plots and Building Patterns.....	184
9.2.2.2	Building Types, Height, Density and Land Utilization.....	187
9.2.2.3	The Road Network Infrastructure and Carrying Capacity .....	190
9.2.2.4	Environmental quality and the Condition of Buildings .....	192
9.2.3	Victoria Island - case study three.....	195
9.2.3.1	Spatial Configuration: Plots and Building Patterns.....	199
9.2.3.2	Building Types, Height, Density and Land Utilization.....	200
9.2.3.3	The Road Network Infrastructure and Carrying Capacity .....	203
9.2.3.4	Environmental quality and the Condition of Buildings .....	203
9.3	Findings and Comparative Analysis of Case Study Areas.....	207
9.4	Conclusion.....	211
<b>CHAPTER TEN.....</b>		<b>212</b>
<b>ANALYSIS AND DISCUSSION OF RESULTS .....</b>		<b>212</b>
10.0	Introduction.....	212
10.1	Analysis of Information from Agencies of (MPP&UD and Study Areas.....	212
10.1.1	Administration and Functions of the Ministry and Agencies .....	212
10.1.2	Urban Planning and development approval.....	214
10.1.3	Enforcement of Development Control.....	218
10.1.4	Competence, Training and Data .....	219
10.1.5	Operational Challenges; Compliance, Enforcement and Monitoring.....	220
10.1.6	Discussion .....	<b>Error! Bookmark not defined.</b>
10.2	Analysis of information from property owners in the selected case study areas ....	224
10.2.1	Access to Mortgage Facility .....	225
10.2.2	Control Implementation; Awareness, Compliance and Enforcement.....	226
10.2.3	Land utilization and compliance.....	230
10.2.4	Urban Planning and Policy .....	230
10.3	Test of Hypotheses and Inferential deductions .....	233
10.4	Discussion of Findings .....	237
<b>CHAPTER ELEVEN.....</b>		<b>240</b>

<b>SYNOPSIS, MODEL DEVELOPMENT AND POLICY RECOMMENDATIONS</b> ....	240
11.0 Introduction.....	240
11.1 Synopsis of Research by Objectives .....	240
11.2 Conclusion and Recommendations .....	245
11.3 Land Use Optimization & Effective Control Model - Objectives & Mechanisms .	246
11.3.1 Implementation of the model .....	250
Conclusion .....	258
BIBLIOGRAPHY.....	260
APPENDIX.....	283
Appendix 1: Population projections of Local Government Areas and their respective Population Density: 2007–2009 .....	283
Appendix 2: Independent Observation Results of Survey .....	286
Appendix 3: MAPS.....	289
Appendix 4: REQUENCY TABLES.....	297
Appendix 5: Ethical Clearance .....	308
Appendix 6: Informed consent for conducting interview with key informants.....	311
Appendix 7: Guide Line Questions for Interview.....	313
Appendix 8: Guide Line Questions for Interview.....	316
Appendix 9: Guide Line Questions for Interview .....	318
Appendix 10: Informed Consent to Participate in Research Survey (Questionnaire) .....	320
Appendix 11: Questionnaire for CDAs- (Landlords/Property Owners) .....	322

## LIST OF TABLES

Table 2.1: Observed indicators/Spatial Elements, Ground -Patterns and Relationships .....	18
Table 2.2: Landsat Data Sensor and Band Specifications .....	20
Table 2.3: Showing Environment Quality Scoring Codes.....	20
Table 2.4: Selected Study Area.....	21
Table 2.5: Selected roads and buildings in study areas .....	23
Table 2.6: Coded Delineated Parts for Spatial Attributes.....	24
Table 2.7 Showing Sample Size of Respondents.....	26
Table 2.8: Detailed Outline of the Methodology .....	31
Table 3.1: Cities Classification by Size .....	36
Table 3.2: Selected Cities by function across the World.....	37
Table 3.3: Summary of the Concentric Zone Model .....	46
Table 7.1: Urban planning administration provided by the NURP Act No.88 of 1992 .....	123
Table 7.2: The Lagos Planning Institutions and Structures .....	128
Table 8.1: Population and Land Size of Nigerian States and the FCT .....	135
Table 8.2: Land Mass/Water Area of Lagos Mega City.....	138
Table 8.3: Population Growth and Aerial Extent (1911-2006).....	147
Table 8.4: Population of the state and land size per Local area.....	149
Table 8.5: Demographic Analysis of Lagos (1991-2006) .....	151
Table 8.6: Land use structure of 1976 and budget for year 2000 .....	152
Table 8.7: Housing status in Lagos metropolis.....	154
Table 9.1: Growth patterns and spatial expansion, 1986-2015 (30 years).....	157
Table 9.2: Spatial growth from 1986-2015.....	157
Table 9.3: Accuracy Assessment Results .....	162
Table 9.4: Observed land uses in selected parts of Isale-Eko & Marina .....	164
Table 9.5: Markets on Lagos Island.....	168
Table 9.6: Building heights observed in Lagos Island.....	173
Table 9.7: Means of scores allocated to urban features in Lagos Island .....	178
Table 9.8: Observed land uses in Apapa.....	182
Table 9.9: Building heights observed in Apapa.....	187
Table 9.10: Means of scores allocated to urban features in Apapa .....	192
Table 9.11: Observed land uses in Victoria Island .....	195
Table 9.12: Building heights observed on selected streets in Victoria Island .....	201



Table 9.13: Means of scores allocated to urban features in Victoria Island .....	204
Table 9.14: Comparative Analysis of Building use observed.....	207
Table 9.15: Comparative Analysis of Building Types observed .....	208
Table 9.16: Comparative Analysis of environmental attributes of the Case Study Areas.....	209
Table 10.1: Developments that require approval under the 2010 Planning Law.....	214
Table 10.2: Requirements for Granting a Development Permit .....	215
Table 10.3: Summary of agencies' functions, and development procedures and criteria .....	221
Table 10.4: Respondents' access to Mortgage Facility .....	225
Table 10.5: Awareness, Compliance and Enforcement .....	226
Table 10.6: Approval for Development .....	227
Table 10.7: Development Charges/Fees .....	228
Table 10.8: Approval of Change of Use for Existing Development.....	229
Table 10.9: Land utilization and compliance.....	230
Table 10.10 Responses on urban planning policy .....	231
Table 10.11: Responses on Public Participation in Urban Planning.....	232
Table 10.12: Respondents' recommendations .....	233
Table 10.13: Statistics for Hypothesis one .....	234
Table 10.14 T-Test Statistics for Hypothesis one.....	234
Table 10.15: One-Sample Statistics.....	235
Table 10.16 : One-Sample Test .....	236

## LIST OF FIGURES

Fig. 1.1: Relationships of Urban Morphological Studies .....	3
Fig. 1.2: Approaches of Morphological studies.....	4
Fig. 1.3: Outline of Research .....	10
Fig. 2.1: Flow Chart Showing Data Sources and Collection Process.....	17
Fig. 2.2; Selected Case Study Areas in Lagos .....	22
Fig. 2.3: Maps showing selected streets in Lagos Island.....	24
Fig. 2.4: Showing selected streets in Apapa and Victoria Island.....	25
Fig. 2.5: Organizational Structure of the Lagos Physical Planning Agencies .....	27
Fig. 2.6: Simplified method for supervised image classification (1986, 2006 and 2015) .....	28
Fig. 3.1: Conceptual framework of settlements classification.....	35
Fig. 3.2: Urban Texture Model .....	38
Fig. 3.3: Elements of Space .....	39
Fig. 3.4: The Concentric Zone Model.....	44
Fig. 3.5: Hoyt's Sector and Multiple Nuclei City Model .....	47
Fig. 3.6: Central Place Theory .....	51
Fig. 3.7: Growth Pole Model .....	52
Fig. 3.8: Sense of Place.....	54
Fig. 3.9: Components of sense of place .....	56
Fig. 4.1: Garden City model .....	72
Fig. 4.2: The City of Tomorrow.....	74
Fig. 4.3: Compressed Aerotropolis Schematic with Airport City Core .....	76
Fig. 4.4: New urban form (Kasarda).....	76
Fig. 4.5:Sub-urban low-density development.....	83
Fig. 5.1: Dimensions of Sustainable Development.....	87
Fig. 5.2: Compact land utilization.....	91
Fig. 5.3: The Compact Sustainable City .....	92
Fig. 5.4: Incremental densification plan .....	98
Fig. 5.5: The Neighbourhood Model .....	99
Fig. 6.1: Objectives of urban planning.....	104
Fig. 8.1 Map of Africa showing Nigeria.....	134
Fig. 8.2: Map of Nigeria Showing Lagos .....	134
Fig. 8.3 National population distribution: an extrapolation of the 2006 NPC.....	136
Fig. 8.4 National Land Size Distribution: an extrapolation of the 2006 NPC.....	136

Fig. 8.5 Population Densities of States in Nigeria: an extrapolation of the 2006 NPC .....	137
Fig.8.6: Metropolitan Lagos Showing Built up areas .....	139
Fig. 8.7: Map of Lagos.....	140
Fig. 8.8: Pre-Colonial Lagos.....	142
Fig. 8.9: First Settlements of Lagos Mega City .....	144
Fig. 8.10: Map of the Four Settlement Quarters in Lagos Island .....	145
Fig. 8.11: Map of Lagos showing continuously built up area .....	148
Fig. 8.12: Population distribution of Local Government Areas in Lagos based on the 2006 census.....	150
Fig. 8.13: Population Density of Local Government Areas .....	150
Fig. 8.14: Housing Deficit in Lagos State.....	154
Fig. 9.1: Growth trends in Lagos city .....	158
Fig. 9.2: Growth of the city by 1986.....	158
Fig. 9.3: Growth of the city by 2000.....	159
Fig. 9.4: Maps showing temporal growth extent of the city, 1986-2015.....	159
Fig. 9.5: Changing morphology of metropolitan Lagos, 1986-2015 .....	160
Fig. 9.6: Development intensity and sprawling development by 2006.....	161
Fig. 9.7: Development intensity and sprawling development by 2015.....	161
Fig. 9.8: Spatial patterns and built up areas in Lagos mega city .....	162
Fig. 9.9: Land use in the Isale-Eko area of Lagos Island.....	165
Fig. 9.10: Land use of the Marina Area of Lagos Island. ....	165
Fig. 9.11: Map showing irregular plot subdivision in Isale-Eko, Lagos Island.....	169
Fig. 9.12: Map showing Plots layout on the Marina, Lagos Island .....	170
Fig. 9.13: Map showing development patterns in the Isale-Eko area of Lagos Island .....	171
Fig. 9.14: Map showing development patterns in the Marina area of Lagos Island.....	171
Fig. 9.15 Building heights in Isale Eko, Lagos Island .....	173
Fig. 9.16 Building heights in CBD, Marina Lagos Island .....	174
Fig. 9.17: Map showing the roads network on Lagos Island.....	177
Fig. 9.18: Residential land use in Apapa .....	183
Fig. 9.19: Industrial/ port and commercial land uses.....	183
Fig. 9.20: Apapa Map showing plots layout .....	185
Fig. 9.21: Apapa Map showing Plots layout of selected streets .....	185
Fig. 9.22: Map showing development patterns in Apapa, Lagos.....	186
Fig. 9.23: Map showing development patterns in selected parts of Apapa, Lagos.....	186

Fig. 9.24: Building Heights in Apapa .....	187
Fig. 9.25: Map showing the road network in Apapa.....	190
Fig. 9.26: Observed land use in selected parts of Victoria Island.....	196
Fig. 9.27: Commercial land use in Victoria Island .....	197
Fig. 9.28: Plot layout in Victoria Island.....	199
Fig. 9.29: Plot layout in selected parts of Victoria Island.....	199
Fig. 9.30: Plot layout in selected streets of Victoria Island .....	200
Fig. 9.31: Development patterns in selected parts of Victoria Island.....	200
Fig. 9.32: Building Heights in Victoria Island.....	201
Fig. 9.33: Road Network in Victoria Island.....	203
Fig. 11.1: The Land Use Optimization & Effective Control Model (LUOEC Model) .....	249
Fig. 11.2: Components of Mixed-use development.....	253

## LIST OF PLATES

Plate 8.1: Showing old Lagos 1929 .....	143
Plate 8.2: Showing Sectoral Development on Massey Street, Lagos Island .....	146
Plate 9.1: Showing Markets and Commercial Activities on Nnamdi Azikiwe Street .....	166
Plate 9.2: Formal commercial activities in the Isale-Eko area of the island.....	166
Plate 9.3: Picture showing parts of the Balogun Market and environs.....	167
Plate 9.4: Picture showing building being transformed for commercial use .....	167
Plate 9.5: Road median being used for street trading .....	167
Plate 9.6: Aerial view of the Lagos Island Central Business District; Marina .....	172
Plate 9.7: Showing Aerial View of Marina Extending into Isale-Eko.....	175
Plate 9.8: Blocks of building in Lagos Island.....	175
Plate 9.9: Balogun road.....	175
Plate 9.10: Showing the bridges than link the Lagos Island with the mainland .....	176
Plate 9.11: Showing congested buildings around Adeniji Adele Environs, Lagos Island.....	179
Plate 9.12: Showing Buildings around Idumota, Lagos Island.....	179
Plate 9.13: Showing dilapidated building in Lagos Island .....	180
Plate 9.14: Showing poor housing conditions on the Lagos Island .....	180
Plate 9.15: Nnamdi Azikiwe Street, Idumota .....	181
Plate 9.16: Showing poor sanitation in Lagos Island.....	181
Plate 9.17: Port activities in Apapa.....	184
Plate 9.18: Port/industrial Land use, flour Mills.....	184
Plate 9.19: House types on Wharf road and environs .....	188
Plate 9.20: Building types on marine road.....	187
Plate 9.21: Warehouse road.....	189
Plate 9.22: Development on Creek road .....	189
Plate 9.23: Traffic on Apapa Road in Lagos On Wednesday (9/7/14).....	191
Plate 9.24: Degenerating environment in Apapa. ....	193
Plate 9.25: Blocked drainage on Creek road.....	194
Plate 9.26: Open drainage on Marine road .....	194
Plate 9.27: Drainage littered with refuse on Ware house road .....	194
Plate 9.28: High Rise Commercial Building on Adeola Odeku Street Victoria Island .....	198
Plate 9.29: Commercial buildings on Adeola Odeku, Victoria Island.....	198
Plate 9.30: High residential density development.....	200
Plate 9.31: Aerial view of Kofu Abayomi Street.....	202

Plate 9.32: Showing Poor Setbacks from Roads on Ahmadu Bello Way.....	204
Plate 9.33: Showing Informal Trade on The Setback and Vehicles Parking on Drainages...	205
Plate 9.34: Showing unsafe pedestrian paths by open drainages.....	205
Plate 9.35: Picture showing evolving high-rise development in Victoria Island.....	206
Plate 9.36: Showing a blocked open drainage in Victoria Island .....	206
Plate 9.37: Showing a poorly constructed & maintained drainage in Victoria Island.....	206

## **ABBREVIATIONS AND ACRONYMS**

<b>C of O</b>	Certificate of Occupancy
<b>CBD</b>	Central Business District
<b>DC</b>	Development Control
<b>DO</b>	District Offices
<b>DPPO</b>	District Planning Permit Office
<b>DU</b>	Dwelling Units
<b>FAR</b>	Floor Area Ratio
<b>FSR</b>	Floor Space Ratio
<b>ICT</b>	Information Communication Technology
<b>LGA</b>	Local Government Area
<b>LBCO</b>	Local Building Control Office
<b>LPA</b>	Local Planning Authority
<b>LPPO</b>	Local Planning Permit Office
<b>LUD</b>	Land Use Development
<b>MA</b>	Metropolitan Area
<b>MPP&amp;UD</b>	Ministry of Physical Planning and Urban Development
<b>MXDs</b>	Mixed-use Developments
<b>PP&amp;UD</b>	Physical Planning and Urban Development
<b>PR</b>	Plot Ratio
<b>SER</b>	State of the Environment Report
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>SSA</b>	Sub-Saharan Africa
<b>SCDMODEL</b>	Sustainable City Development Model
<b>TPA</b>	Town Planning Authorities
<b>UNCHS</b>	United Nations Centre for Human Settlements
<b>WCED</b>	World Commission on Environment and Development
<b>Military administration</b>	(1966-1979 and 1984-1999)
<b>Civilian administration</b>	(1960 to 1966; 1979-1983 and 1999- date)

## DEFINITION OF WORDS

<b>Agglomerations</b>	A chain of cities with discontinuous suburbs connected by a continuous urban area
<b>Automobile-dependent uses</b>	Land uses that rely on cars to function
<b>Building mass</b>	The cumulative size of a building, height, width, and depth
<b>Buildings</b>	Houses, structures, and constructions in various types, shapes and sizes that are designated for different uses
<b>Carrying Capacities</b>	A component of environmental quality, it is the ability of the environment or city to provide support facilities and infrastructure to successfully maintain itself and its effective daily functioning. This involves roads, power, water, etc.
<b>Case studies</b>	A method of research that focuses on a particular point, object, place etc. as a point of reference over a period of time
<b>Central Place</b>	Any settlement that provides goods and services for smaller neighbouring settlements
<b>Centrifugal force</b>	The factors that discourage settlement growth and development
<b>Centripetal force</b>	Factors that encourage settlement growth and development
<b>City</b>	Urban places with a population of over 20,000 and economic centres with a wide sphere of influence
<b>Clustered Settlement</b>	A settlement where buildings are clustered around a particular point
<b>Compact development</b>	Concentrated development of buildings, land uses and facilities built in proximity that discourages auto-dependence due to reduced need to travel; and accommodates high population density and hence promotes maximum utilization of urban services and infrastructure
<b>Concurrent mixed methods</b>	Involves the use of quantitative and qualitative data side by side in order to achieve a detailed and complete study of the research problem
<b>Control</b>	The degree of access to and use of spaces and activities by policy and plans
<b>Control department</b>	The agency responsible for the control of development in the Ministry of physical planning and development.
<b>Conurbation</b>	Large urban clusters of continuous development merged together



<b>Detached house</b>	A house that stands alone
<b>Development intensity</b>	Permissible building mass and use in specified zones
<b>Development permit</b>	Authorization to undertake any form of physical development given by the agency responsible under the law.
<b>Development plan</b>	A general plan that provides for development control indicating permissible and non-permissible development intensity and use
<b>Dispersed Settlement</b>	A settlement whose buildings occur randomly without a particular pattern or central place
<b>Durability</b>	This is the resilience of a city, its elasticity, ability to withstand degeneration and adaptable to changes
<b>Enforcement notice</b>	Includes a stop notice, contravention notice and a demolition notice
<b>Environmental Quality</b>	The worth of the environment based on its good attributes; an environment is classified as good when it possesses the ambience, beauty, safety, open spaces and gardens required for recreation and most importantly, is clean and healthy for habitation
<b>Exchange value</b>	Represents the value of land or property if it were to be offered for sale
<b>Figure Ground Relationships</b>	The relationship that exists between buildings, open spaces: squares, parks and gardens. These relationships are expressed as Scale, Proportion and Unity: Beauty and Order, Symmetry Balance and Rhythm, Permeability etc. in urban design.
<b>Filtering</b>	A process of movement from one residential area to another as may be determined by social class and status
<b>Floor Area Ratio</b>	The ratio of the gross building area and the net land area the building is built on
<b>Function of a Settlement</b>	The major activity that earns a settlement its resources and income; e.g., administration, commerce, port, tourist cities, etc.
<b>Gentrification</b>	A process by which redeveloped inner city areas are re-inhabited by the upper social class for easy access to the jobs and services of the city center
<b>Greenbelt</b>	A policy that prevents urban sprawl from encroaching on rural land; the policy delineates the countryside for agricultural and less urban land

uses, thereby controlling growth and connecting urban dwellers to nature

<b>Hamlet</b>	A small group of houses that possibly includes a small religious meeting place with a traditional medicine house and a small place for social gatherings
<b>Hierarchy</b>	A classification of settlements based on their population, size, services and sphere of influence
<b>Incompatible use</b>	Land use is incompatible or non-conforming if it cannot co-exist because differences with respect to its functions and the impact on the physical environment
<b>Infill redevelopment</b>	The development of lost spaces, or vacant or underutilized lands
<b>Inner City</b>	The part of the urban area surrounding the CBD; a place of concentration of predominantly low-income population, physical degeneration and failing carrying capacities.
<b>Isolated dwelling</b>	Usually refers to a farm house standing by itself in the countryside; it can be self sufficient
<b>Land policy</b>	All the ways in which the state seeks to intervene in the use, exchange, value, ownership, management and development of land
<b>Large village</b>	This has a greater variety of social and economic functions with more than one meeting place, inns, and schools, a market, means of communication, and probably a bank. It also offers facilities like electricity, hospitals and water
<b>Linkages-Urban Web</b>	The urban web is the foundation upon which the city is built. It comprises the road networks, its layout and hierarchy
<b>Lost space</b>	This term is used to qualify spaces used below their optimal capacities. These underused, deteriorating spaces include deteriorated parks, abandoned public housing that does not serve its purpose, parking lots, edges of freeways, abandoned water fronts, train yards, etc.
<b>Metropolitan area</b>	A metropolitan area is a network of cities with a large population centre
<b>Misused Land</b>	When land is used for the wrong purpose, underused or over-used
<b>Mixed land use</b>	Any place or lot with varied or diversified land use; it may occur horizontally or vertically on different floors of a building

<b>Mixed-use methods</b>	This involves a mix of the methods required to provide adequate understanding and solutions to the problems under study
<b>Multi-use</b>	Denotes any project with multiple uses but falling short of the mixed-use development criteria
<b>Normative theory</b>	A theory that deals with generalizable connections between human values and settlement forms
<b>Operative Development Plan</b>	Any plan that has been formally endorsed for implementation
<b>Pedestrian Amenities</b>	Facilities that support walking such as safe and well-lit walkways, seating at bus stops and parks, and shelter from rain and harsh weather conditions
<b>Planning Permit</b>	Approval or assent for a development, including layout or a subdivision plan, and building control authorization at construction and post-construction stages
<b>Port</b>	A settlement where ships can be safely anchored and sheltered from the sea
<b>Proposed land use</b>	This is an anticipated or recommended land use planned for development.
<b>Rationality</b>	This is the reasonableness in a decision-making process towards best-fit approaches.
<b>Research design</b>	The strategy and approaches adopted to carry out a research project
<b>Road Hierarchies</b>	Classification of the various types of roads according to their size and the volume of traffic they can accommodate at a point in time
<b>Redevelopment</b>	The process whereby an existing inner city is rebuilt to a plan after complete or partial demolition of old and decayed houses, creating a new and modern development to replace the old one
<b>Rehabilitation</b>	A planning process whereby individual structures are improved to meet established building standards and criteria. It is also referred to as a Renovation Scheme
<b>Small village</b>	A little bigger than a hamlet, with few social features and a small market
<b>Sphere of Influence</b>	The area served by a settlement, and the extent of its relevance to other places

<b>Street Layout</b>	The manner in which streets are designed and laid out. Streets are laid in grids, or circular and other patterns that determine the forms of the city
<b>Sustainable development</b>	Development that can be maintained and serviced that achieves a balance in the ecology without exhausting natural resources
<b>Thematic maps</b>	Single purpose maps showing the spatial distribution of a single variable or feature, e.g., a map that shows only population density
<b>Town planning</b>	The process of designing, organizing, making forecasts and development of cities guided by policies
<b>Up-Grading or Regeneration</b>	This is raising the standards of a city either by improving some parts to meet stipulated planning standards.
<b>Urban furniture</b>	Includes all the physical structures placed on the landscape and affixed to the land distinct from actual buildings and includes bus stop shelters, telecommunication antennae, masts and towers, cables and pipes, street signs, advertisement billboards, light statues, artefact placements, fountains and direction finders
<b>Urban metabolism</b>	The total function of the city systems and their outcomes, and the processes of growth, development, resource consumption and waste generation and elimination
<b>Urban Renewal</b>	The intervention approach or approaches to deteriorated cities; determined by the severity, it conserves, regenerate or carryout an outright redevelopment.
<b>Urban Sprawl</b>	Unplanned outward spread and growth of cities into rural low-density surrounding countryside that is mostly uncontrolled and auto dependent
<b>Use value</b>	The utility or profitability that land or property affords to a user in a use This is the liveliness of the city, enhanced by form and functional compatibility.
<b>Vitality</b>	
<b>Zoning</b>	Land use segregation, allocation of places to predetermined land uses. It was aimed at separating incompatible uses.

# CHAPTER ONE

## INTRODUCTION OF STUDY

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### 1.0 Background Information

Urban Morphology is the study of patterns, shapes and forms of human settlements; it traces the physical configuration, arrangement of city elements (street/block, plot series, building etc.) and the process of their transformation (Whitehand, 2005). It studies these components and their outcomes; order, function and aesthetics, among other factors, in the development process. Morphology examines the overall character or shape of the city and land use occurring as mono-centric or poly-centric, centralized/decentralized patterns and continuous versus discontinuous forms of development (Rodrigue et al., 2009). Other attributes of size, scale, dimensions, and intensity are vital; sustainable urban form is dependent on the relationship between these elements (Coupland, 1997; Grant, 2002; Hoppenbrouwer & Louw, 2005; Kropf, 2005; Rowley, 1996; Tsai, 2005).

Scholars that subscribe to this school of thought have used different scales to rank the urban environment. They maintain that the urban environment consists of parts (mosaics) which come together to form the physical space. The network and aggregation of elements that are connected to one another through interdependent relationships is essential to urbanism and urban design (Kropf, 2005; Whitehand, 2005). It consists of either the horizontal or vertical order of these elements. The characteristics of the smallest unit determine the outcomes of their aggregation on a larger scale. Each element of the urban environment should work as part of the whole; individually and collectively, they operate together in a hierarchical and sequential order.

Urban Morphology varies in response to the demands and challenges of growth. The hypothesis that cities expand to absorb population growth put forward by Jayantha & Lau (2008) is evident; rural areas become absorbed into metropolitan areas that later evolve to accommodate urban agglomerations. The resultant modifications to the natural state of the environment, increased demand for land, forms of production and consumption have significant spatial effects; hence, a dynamic relationship exists between urban structure and growth.

Population growth is one of the primary catalysts of land use change; when there is lack of strategic planning and development, urban expansion is difficult to control, (UN, 2008).

Such growth patterns are characteristic of poorly managed cities and are visible in many metropolitan areas across the world. Sprawl, a resultant of the above is a decentralized pattern of urban growth that results in damage to the natural environment, decay in inner cities and failing carrying capacities (Alexander & John, 2006). This phenomenon is consuming considerable amounts of land in cities around the globe causing unsustainable use of space, destabilizes the balance of nature and threatens the quality of life (Sarvestani, et al. 2011; UN-HABITAT, 2008).

Growing interest in sustainable development led to increased research on land use. Compact, mixed land-use development has been endorsed to achieve sustainable urban development and forms; regardless of size, cities should promote sustainable densification. The control of physical development, and urban expansion is crucial to sustainable development, hence many states have put policies in place to shape settlement patterns (Ingram et al. 2009).

Despite the approaches that abound, Nigerian cities, particularly metropolitan Lagos which is the study area have failed to achieve good city forms. Overcrowding in the metropolis has obvious consequences in terms of mobility, living conditions and the depletion of resources and pressure on infrastructure. Inconsistent governance, policy formulation and lack of implementation are equally responsible for the poor environmental performance.

Furthermore, there is a lack of consideration for city forms in urban planning. The rapid population growth and limited space for development has not influenced the approach to planning and development of the Lagos city. Planning approaches and policies are not hinged on the restricted land space, high population and the multifunctional role the city plays. The planning authority seem to be over whelmed by the enormous challenges and are yet to adopt holistic strategies that will would make it function as a mega city.

While the need for sustainable development is widely acknowledged and a variety of approaches have been proposed to achieve this objective, little or no studies of Lagos have been conducted on morphology or its analysis with a view to proposing for sustainable land use optimization for the rapid growing city.

## **1.1 Approaches of Morphological Studies**

The complex and changing attributes of morphology necessitates methods that can anticipate and integrate change. This requires inductive<sup>1</sup>; deductive<sup>2</sup>and dialectic<sup>3</sup>approaches

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<sup>1</sup>to observe and describe

<sup>2</sup>to model

(Briassoulis, 2000). Morphological studies consist all aspects of development and attributes of the built environment; density and spatial organization. Studies have adopted approaches to urban design, (Forsyth et al. 2010; Montgomery 2007; Moudon, 2006). Fig. 1.1 clearly illustrates the approaches of morphological studies, scopes and scales. The choice of approach is determined by the scope of study and area of interest of the researcher. The approaches cover a wide range of visual evaluation methods and urban design theories. Morphological analysis can thus be based on living spaces created or modified (Sarkis et al. 2008). These include buildings, open spaces, plots, streets and historical information justifying the outcomes of urban forms. The approach is rooted in history as traces and trend of past developments are strongly and deeply rooted in the dynamics of all urban environments (Moudon, 2006).

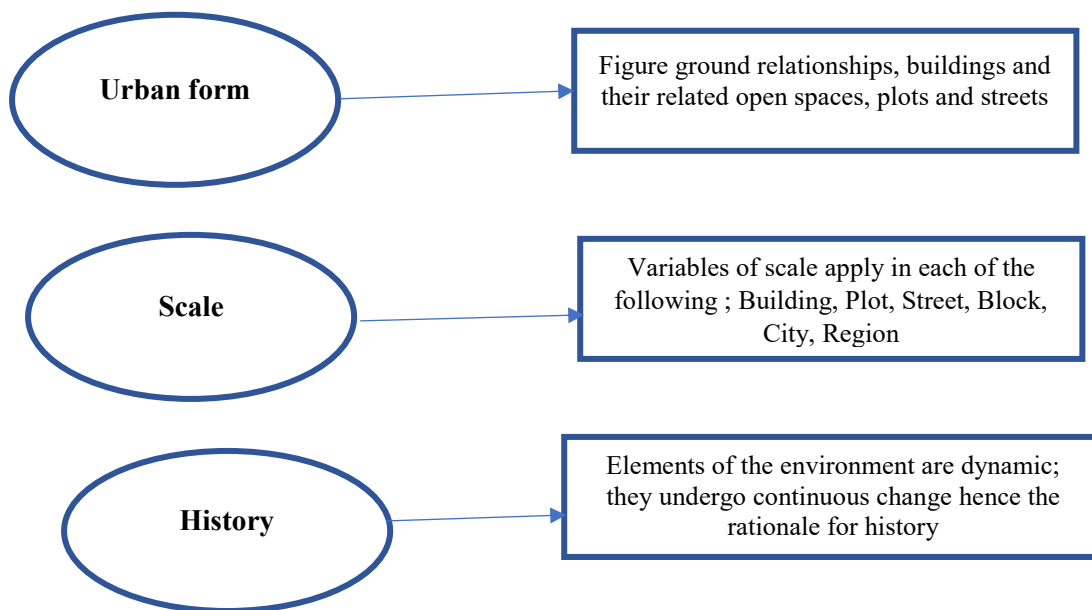


Fig. 1.1: Relationships of Urban Morphological Studies  
Source: Author, 2018

Studies conducted are for various reasons and their expected out comes differ. As shown in Fig.1.2. Morphological studies could be descriptive; unfolding approaches used to build cities and their rationale towards developing theory for city building. In addition, as implied by the name, prescriptive studies develop and recommend theories of city design. Such studies focus on best approaches to cities development. Evaluative studies of urban form measure impacts

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<sup>3</sup> to integrate

and variations between proposed plans and development. They assess compliance and control of development.

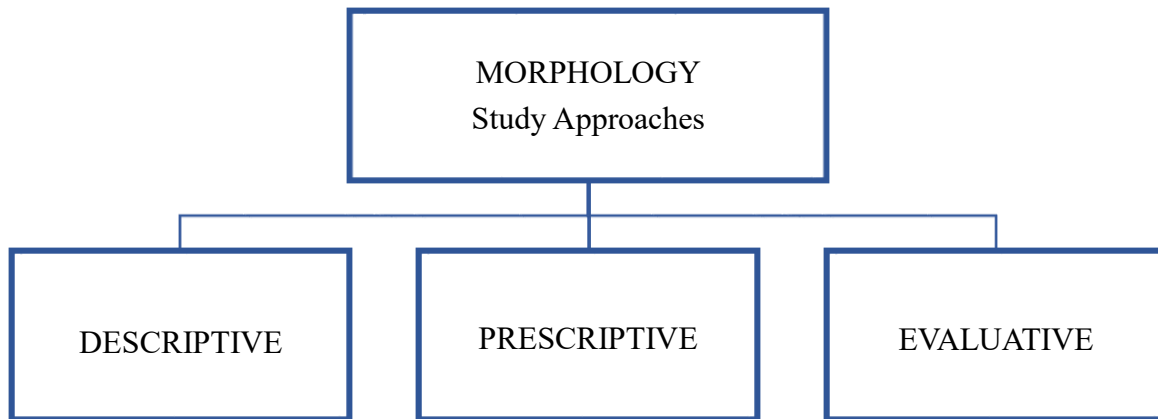


Fig. 1.2: Approaches of Morphological studies  
Source: Author, 2018

Studies of urban development patterns have been conducted since urban environments emerged and will continue to advance if cities continue to evolve and transform. Over the years, this subject has attracted the attention of scholars across a range of disciplines including Geography, Architecture, Science and Philosophy to address the problems and meet the demands of urban development. Such studies have advanced incrementally in terms of innovations, theories, techniques and scope. Methodologies differed, improved and modified to accommodate the dynamic and ever-changing factors that influence the physical environment and development.

Whitehand (2001), described the approaches to morphological research in various hierarchies of the built environment that thrived in the 20th century; sating two schools of thought dominated the field of urban form analysis, the Conzen and Caniggan schools. This is followed by the emergence of the Space Syntax (Sima & Zhang, 2009). The Space Syntax is purely scientific analytical mathematics comprising of the techniques used for spatial computation, description and representation, while the Conzen and Caniggan schools of thought were influenced by geography and architecture, respectively, representing two types of morphological investigation; one based on town plans and the other on the internal structure of the fabric (architecture).



Places can be examined by an observer based on basic concepts of urban geography, (Pacione, 2005), hence specific elements to achieve sustainable development can be drawn out, (Jabareen, 2006).

Conzen used town plans for morphological research that examined buildings and plots at the same time as an integrated entity which is what land use planning is all about. This form of morphological studies is critical for urban design and it is relevant at different levels using different approaches. Lynch, (1960) used mixed methods, interviews and spatial surveys to assess the image of the city. Land use studies can be varied and classified; it involves detecting the changes, nature, extent and patterns of change, (Macleod & Cognation, 1998). Forsyth et al. (2010) used combined methods to study three transit station environments. Tsai, (2005) developed quantitative variables to measure dimensions of urban form at the metropolitan level. The study measured size, activity intensity, distribution and the extent of clustering and consequently distinguish compactness from sprawl.

The Irvine Minnesota Inventory was designed to audit the impact of the built environment on physical activity levels, through mixed methods; literature review, focus group interviews, informed groups and field surveys, (Day, et al. 2005). Occurring both as a paper version for field survey and as in Microsoft Access, to allow for direct data inputs and process as outlined by Day, et al. (2005) is a comprehensive inventory bothering around convenience, choice and safety. The fabric or nature of the physical environment and its morphology can therefore be studied in various ways and levels considering different factors relevant to the field. It is thus clear that there are varying approaches to plan for a sustainable environment as the lens through which these fields of studies view it differs. Hence it is recommended that there should be common objectives despite the disparities in methodologies.

## **1.2 Problem statement**

Nigeria's three identifiable development phases, the pre-colonial, colonial and post-colonial periods have all left their marks on the country's landscape. The Lagos city in Nigeria enabled by colonial legislation and development, as a first-class city became a destination point. Lagos population was estimated above 10 million by UN Habitat in 2010; four years after the Nation and State Census declared 9 and 17, million respectively. The State, based on a 3.2% growth rate projection was estimated to host well over 20 million people by 2015 (Lagos Bureau of Statistics, 2012). This rapid growth, increased demand for land ensued by far-reaching implications on the built environment, economy and society.

Failure to project for rapid urban growth, poor investment in the built environment and inner-city housing has resulted in congestion and substandard housing development in spontaneous settlements. Poor land utilization is evident in the expanding landscape of unplanned, dispersed developments at the periphery. Predictions are that without any intervention, the swampland cover in Lagos would disappear in less than 40 years considering the prevalent conversion of swamps into built up areas. Most of these developments are in informal settlements and slums, (Agbole & Agunbiade, 2009); as the number of slums increased more than double from 42 to 100 within a 30 years period between 1983 to 2013, (Lagos Bureau of Statistics, 2013 in Oshodi et al 2016).

These problems are attributable to rapid population growth and intensified urbanization for which the planning institutions were ill prepared. There has been little or no planning in the metropolitan Lagos though spatially constrained and daunted by high population growth. The regional plan prepared in 1980 with a twenty-year plan period to lapse in 2000 was not implemented and is now being fragmented into model city plans, which are gradually trailing the paths of antecedents.

Furthermore, the politicization of urban space, compromised physical planning institutions coupled with lack of harmonization of policies have resulted in ineffective implementation of development plans, (Fourchard, 2012; Ogu, 1999; Rasaki, 1988). This is reflected in the report that only 30% of buildings in the metropolis are officially approved (IrinNews, 2006). The UNCHS, (1999) also observed that complicated, rigid regulatory requirements and structure are responsible for poor urban forms. The lack of political wills, personnel, obsolete methods, tools and financial investment have been identified as causal to poor spatial forms and territorial expansion, (Aluko, 2011; Bigon 2008; Jat et al. 2007; Oduwaye, 2013; Ogu, 1999). The city manifests poor planning and forms, where development precedes planning and infrastructure and services are afterthoughts, (Koolhaas, 2001). It is famous as a dysfunctional, chaotic city and home to slums with failing infrastructure, (Adetokunbo, 2010). This is due to the illegal conversion of buildings and land uses as well as development in unsafe and unhealthy areas. Gandy, (2005) cited by Adetokunbo, (2010) argues that the metropolis has largely developed independent of the efforts of city planners through a process of amorphous urbanism. Oduwaye, (2013) describes Lagos as a fragmented landscape with non-complementary land uses, resulting to unsustainable morphologies and disjointed patterns of urban spaces with poor functionality of incompatible uses. Therefore, Metropolitan Lagos, being a port city, a strategic economic hub and international destination should be developed to enhance its competitiveness, trade and sustainable development

### **1.3 Key question**

What is the morphology of the Lagos mega-city and what are the implications on the use of space and environmental sustainability?

#### **1.3.1 Sub-questions**

1. What is urban morphology and how does it relate to sustainable development?
2. What is the trend and problems of the use of space in the Lagos mega city?
3. Did changes in administration, functions and urban growth impact the use of land?
4. What is/are the planning framework/frameworks in the city and how have they provided for changing and multiple city functions over time?
5. What techniques are used in urban planning, development control and enforcement?
6. How effective have urban planning, governance and management been?
7. What is/are the impacts of poor morphologies and planning on the use of space?
8. What are the policy implications of the study's findings for sustainable urban land use?

### **1.4 Aim**

The study aimed to examine the morphology of the Lagos mega city and the impacts on the use of land to develop a Model for land use optimization with effective control mechanisms.

#### **1.4.1 Objectives**

1. To carry out a thorough description of the concept of Morphology (land use and pattern of development) in relation to sustainable development.
2. To evaluate the trends (historical/ land use dynamics) and problems associated with the use of space in the Lagos mega city
3. To investigate how changes in administration, function and urban growth impact on the use of land and city form.
4. To analyse the approaches of spatial organization, urban planning and the principles of achieving sustainable built environment.
5. To identify the techniques used in urban planning, development control and compliance.
6. To examine the effectiveness of urban planning laws and regulations, governance and

administration and how the change or adapted over the years towards addressing urban planning and development challenges.

7. To analyse impacts of growth patterns (morphology) through land use mapping and figure ground analysis.
8. To proffer policy recommendations towards sustainable city development.

#### **1.4.2 Hypothesis one**

**H0:** Poor land utilization and uncontrolled urban spatial growth are functions of poor planning and ineffective frameworks in achieving sustainable development.

**H1:** Land utilization and control of urban spatial growth are functions of adequate planning and effective frameworks in achieving sustainable development.

#### **1.4.3 Hypothesis two**

**H0:** Changes in city functions and urban growth have brought about changes in land use; therefore, integrated anticipated growth and forward planning will significantly impact on the urban landscape.

**H1:** Changes in city functions and urban growth have brought about changes in land use; therefore, integrated anticipated growth and forward planning will not significantly have positive impact on the urban landscape.

### **1.5 Justification for the study/ possible outcome**

Urban areas make up a very small fraction of the earth (Fang et al., 2004 cited in Shu-Li Huang et al. 2009). Humankind lives on a relatively small fraction of the earth space of approximately 500 million km<sup>2</sup>; only one third is land and only a fraction of this is occupied by the cities and towns in which most people live; the rest of the earth is uninhabited and remains virtually unknown (Paul Longley et al. 2005 cited in Agamah, 2008). Global population is mostly urban living on 2% of the earth's surface, they have an extensive ecological footprint; continued growth of cities, increased resource consumption and waste generation results in imbalances in the ecosystem, (Pacione, 2005; Sarvestani et al. 2011; Shu-Li Huang et al. 2009; UNEP, 2005). Since the impacts of the development of this small fraction of the earth can affect the whole so severely as to cause environmental problems, sustainable development is imperative.

While sustainability is a global agenda, it requires plans that are implementable at local level (Newman & Kenworthy, 2006). Land use change is the most evident footprint of human activities (Kates et al. 1990, cited in Briassoulis, 2000); hence research on this subject advocate for holistic approaches, especially following the Brundtland report (Briassoulis, 2000). This clearly calls for inter/intra disciplinary research as the answers to almost all environmental and social problems cannot be provided within the limits of any single discipline. Babatunde, (2002) argues that social science research on Lagos has been reduced to mechanistic accounts of spatial disorder; he observes that while these are important, the puzzle that needs to be solved via research transcends these problems.

Consideration for development patterns can help develop more effective strategies and specific policy interventions for urban development and management (Eric et al. 2007). Urban morphology links the spatial elements of the city to its social and economic indicators, (Moudon, 2000). The relationship between these elements, physical change and their causes necessitate forward planning, Roger et al., (2006). The results and outcomes of urban land use studies are important for decision making at all levels of development towards ensuring a sustainable environment and general wellbeing. Very few studies have been carried out on how urban morphology influences the use of space and urban land in the Lagos mega-city. Urbanization and growth should not necessarily result in sprawling development if there is adequate planning and effective urban planning and control.

## **1.6 Scope of the study**

The dynamics of the urban space necessitates the adoption of various methods and tools of analyses. This thesis will concentrate on the physical attributes of the Lagos mega city and will attempt to evaluate in quantitative terms aspects of urban form and structure.

The morphological study of the metropolis was founded on the Figure Ground and internal structure of the city. Hence, this study investigated land use patterns and the policies that mould them with reference to colonial and subsequent administrations. It focused on selected areas of three of the 16 local governments within the metropolis, Apapa, the Port city, Lagos Island, the Central Business District and Victoria Island, a residential cum commercial centre of the metropolis. Planning frameworks, historical growth patterns, the texture of the city and the relationships that exist at the various hierarchies of development were reviewed, as well as land utilization, harmony and qualities that make a city good. The research thus focused on the analysis of the city's physical attributes towards planning for sustainability. It reflected

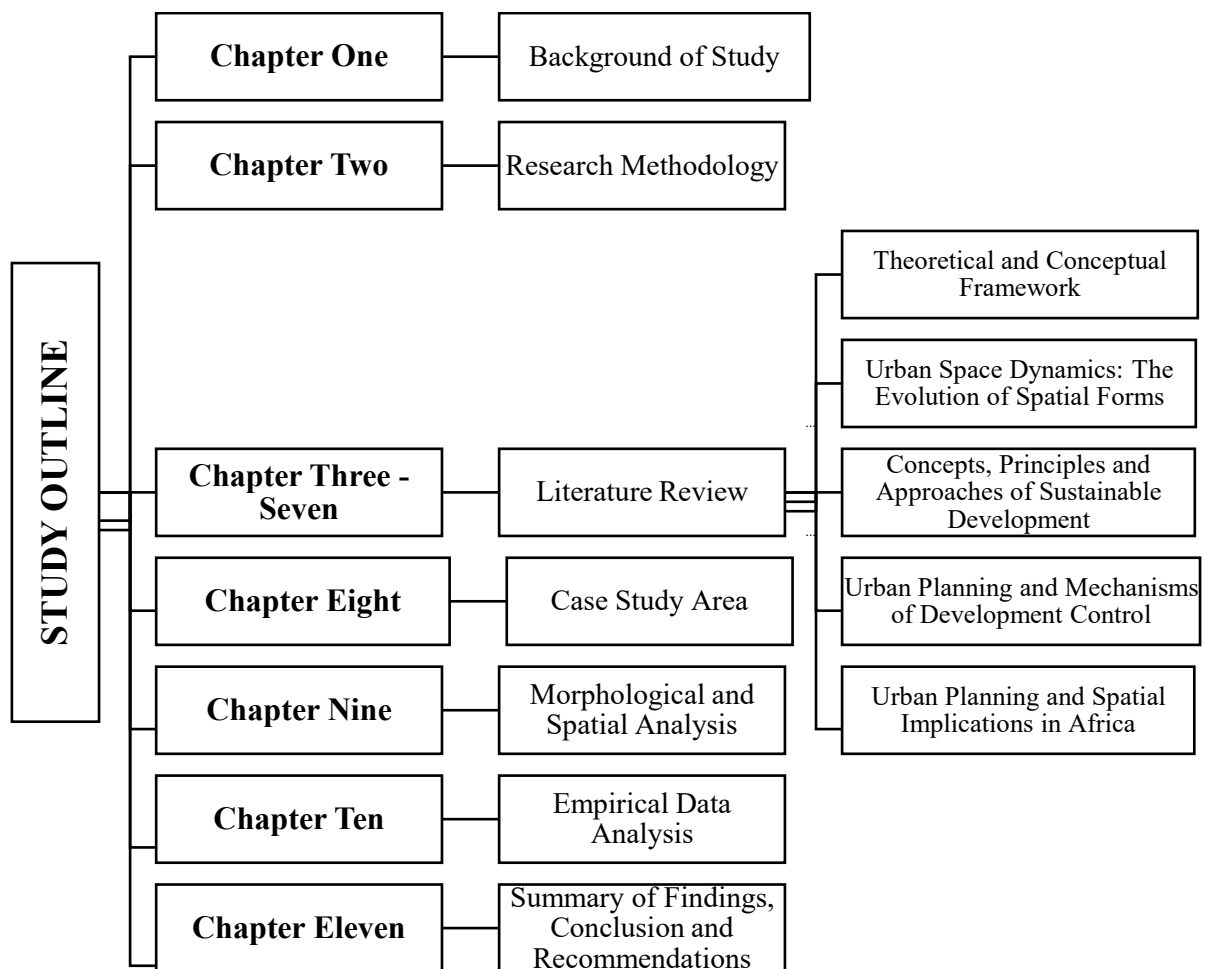
the City's changing boundaries, densities, building styles, transportation infrastructures, and development patterns and proposed a model towards achieving a sustainable urban form.

### 1.7 Limitations of the Study

Thematic maps were not available and hence generated from general maps using data collected from field surveys. Considerable efforts were made to map the built form variables between residential, commercial and other land uses.

### 1.8 Structure and plan of thesis

The study as shown in Fig. 1.7 is organised into eleven chapters structured to achieve the aim and objectives.



**Fig. 1.3:** Outline of Research  
 Source: Author 2018

## **Chapter One: Introduction and background information of Study**

This chapter presents background information to the study; it defined and outlined approaches to morphological studies. It gives theoretical background information and cites previous research and the need for more work. It discusses the problems and their causes and implications along broader issues related to study. It goes further to ask questions, stating hypothesis, specified objectives to achieving aim. The Justification of study, Scope and limitations are also discussed in this chapter. The consequent chapters therefore were tasked to identify methodologies and approaches towards achieving the aim.

## **Chapter Two: Research Methodology**

The chapter discussed the approaches required to answer the research questions and achieve the set objectives. The study used a pragmatic approach to research using the mixed methods. Both qualitative and quantitative methods were used. It outlines the research design, types of data, instruments for data collection and methods of analysis. The spatial/visual analysis provides valuable information on the physical elements of urban environments.

## **Chapter Three: Theoretical and Conceptual Framework**

The chapter discussed the theoretical and conceptual framework that guides the research. It defines the urban form and structure and approaches to morphological studies. It established urban spatial structure and the concepts of sustainable urban planning and design were established and defined. Spatial land use models explain the patterns of land use, how cities grow and the reasons why urban areas grow or decline. They are a guide to policy; hence, if theories are inappropriately used or misinterpreted this may result in misguided and inappropriate policies.

## **Chapter Four: Urban Space Dynamics; Evolution of Spatial Forms**

This chapter discussed the evolution of places, the process of development and factors that influenced growth and forms of development. It reviewed changes in urban forms as influenced by politics, administration and urban management.

## **Chapter Five: The Concept, Principles and Approaches of Sustainable Development**

Chapter five discussed the concept of sustainability and its approaches to urban planning. It discussed the scale, principles, attributes, methods, challenges and outcomes. It highlights and discussed the development strategies towards achieving sustainable spatial forms.

### **Chapter Six: Urban Planning and Mechanisms of Control**

Urban Planning and Spatial Development was discussed in Chapter six. It discussed the concept of planning and the mechanisms of development control.

### **Chapter Seven: Urban Planning and Spatial Forms in Africa**

The chapter carried out a review of spatial planning and forms of African cities vis-à-vis their colonial, political and administrative backgrounds and high rates of urbanization. These have significantly impacted the urban landscape and infrastructure. However, some countries have made significant progress despite these challenges.

### **Chapter Eight: Case Study Area**

The chapter described the geographical location; its evolution, urbanization and growth dynamics, population growth size, density and composition; economic activities, current and past trends of functions and development, land use over the years. The trend and pattern of growth and the factors that influence them, the framework among several issues of disorderliness was reviewed.

**In Chapter Nine and Ten,** presentation of data is grouped into chapters, nine and ten because of the mixed methods used. Results from the field was presented and discussed; both Chapters analysed primary data on study areas; discussed spatial characteristics and patterns of development and their implications. Chapter nine discussed outcomes from the figure ground morphological analysis carried out on three selected case study area as outlined in the methodology. Chapter ten discussed the responses from the interviews and questionnaires administered to town planners and developers in the study area.

Lastly in **Chapter eleven,** a synopsis of the study, conclusion and policy recommendations was carried out. This discussed the achievement of the aim and objectives of the study from which Inferences were drawn for the recommendations and Model.



## CHAPTER TWO

### RESEARCH METHODOLOGY

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#### **2.0 Introduction**

This chapter outlined the research approach and design. It discussed the underpinning epistemology, the methods, types and sources of data required to attain research aim. It stated the procedure and instruments for data collection and analysis. The sampling frames and size are described, and the choice of sampling techniques justified.

#### **2.1 Epistemology: Guiding paradigms and theories**

The Methodology is guided by critical theory and pragmatism; this is because the urban environment has grown over time and has been influenced by many factors. The first cities evolved from small, closely knitted populations to large and dispersed urban settlements. The ideal size of cities has been an issue for debate among theorists for many years as it is difficult to reduce to a formula (Banerjee and Southworth, 1990). Cities grew from subsistence settlements to specialized urban agglomerations characterized by acute congestion, and social disorganization, amongst several other impacts. The definition of a big city has changed (ibid) as urbanization has grown wings, spreading without boundaries or restriction. Thus, critical approaches to planning are required towards evolving responses and approaches for sustainable development.

#### **Critical Theory**

Growing urban problems and concerns relating to sustainability call for comprehensive approaches and methods. There is a need to move away from business as usual towards achieving sustainable development.

Critical theory advocates for sustainable development by challenging old methods. This approach explores alternatives to ensure viable urban space for the future. It seeks to right the wrongs, grounded on fairness, democratic and sustainable urban governance and development (Marcuse, 2009; Brenner, 2009). It emphasizes the requisite rationality of achieving sustainable development due to the malleable character of the urban space which can be continually reformed (Brenner, 2009). Consequently, this theory is relevant in finding lasting solutions to the growing problems of poor planning and neoliberal forms of governance and development in metropolitan cities (Brenner & Theodore, 2005).

Development that violates the values of this theory is not sustainable and hence will not result a good city. The theory seeks to achieve the criteria of the performance dimensions proposed by (Lynch, 1982). This study was influenced by critical theory to achieve sustainability and overcome the power imbalances caused by dominant institutional arrangements, practices and ideologies (Brenner, 2009).

### **Pragmatism**

Furthermore, the character of cities is not stagnant; they play many roles and have continuously changed as far as people have lived in them (Giddings et al., 2005). Though the city is equated to biological organisms, Kennedy et al (2018); Banai and Rapino, (2009) concur with Lynch, (1982) that cities differ being influenced by certain factors and actions to grow or change as evident in the different spatial organisations and formations. This complexity defies a unitary imagery; hence, urban theory has transformed with the city; not one model can adequately represent the city.

Physical planning provides for and deals with problems that confront the environment. It contends with the forces of change to make meaning of the environment and hence must be practical and all-inclusive. Problems relating to the physical environment do not emanate from one source and have evolved over the years. Planning should therefore not adopt some rigid strategy and/or formulae to address such issues. The rational and primary objective of planning is to achieve sustainability; order, functionality and aesthetics within an appropriate approach or methods. This paves the way for flexible approaches to planning and urban development. Pragmatism allows for the choice of techniques and procedures that best meet or address the objectives of a study, (Vicki et al., 2008). Hence the study was guided by the theory of pragmatism which is flexible and enables the use of mixed methods, drawing liberally from quantitative and qualitative approaches to solve the research problems, (Vicki et al., 2008). Mixed methods combine the strengths of qualitative and quantitative approaches (Creswell and Clark, 2007).

## **2.2 Research Design**

Research methods can be qualitative, quantitative and/or mixed; as may be determined by the type of study and expected outcomes, objectives, scopes and other specific aspects of the study. Morphological and spatially based studies comprise several variables. It involves the analysis of physical forms and the causal factors responsible for how they turned out. Informed by critical and pragmatic theories the researcher addressed the research problems

through inductive and deductive approaches towards achieving stated objectives.

The Research design therefore with consideration for the type of study and expected outcomes outlined the methods, (procedures and strategies) from the collection of data to the analysis stage of the study, (Creswell, 2009). A triangulated mixed method using Case Study, qualitative and quantitative Secondary and Primary data involved morphological analysis and an assessment of urban planning, administration, enforcements and compliance with development control mechanisms in study area.

This implies the inclusion of all actors of development, developers and the planners responsible for planning and administration. The target population involved in the study includes stakeholders who are owners of properties in the study area and the planners with the Ministry of Physical Planning and urban development responsible for the implementation of development plans; urban planning and development control in Lagos State as provisioned in the urban Planning Law of 1992 and the Lagos State Urban Planning Law 2010.

The study involved a mix of literature review, document/map analysis, observation, site reconnaissance, interviews, and semi structured questionnaire administered to key informants and stakeholders in the case study areas respectively. The combination of qualitative and quantitative data offers most complete data and information that can be reliable for generalization.

The study areas (Lagos Island, Apapa and Victoria Island) are fully built up area with rarely any vacant plots. Morphological studies and field reconnaissance observed spatial relationships and outcomes of urban form elements from ground plan-patterns of streets, plots, building blocks and land utilization. While the characteristics of each of these have impact on urban form, the relationship of these elements are essential for urbanism and urban design; they jointly form the urban space, (Rowley, 1996; Coupland, 1997; Grant, 2002; Whitehand 2005; Hoppenbrouwer & Louw, 2005; Kropf, 2005; Tsai, 2005). Procedure for this includes data input, integration, digitizing, overlay, thematic map production and form analysis of study area. The research design involves reconnaissance and pilot study for validity and reliability of methods.

## **2.3 Instruments and procedure for Data Collection**

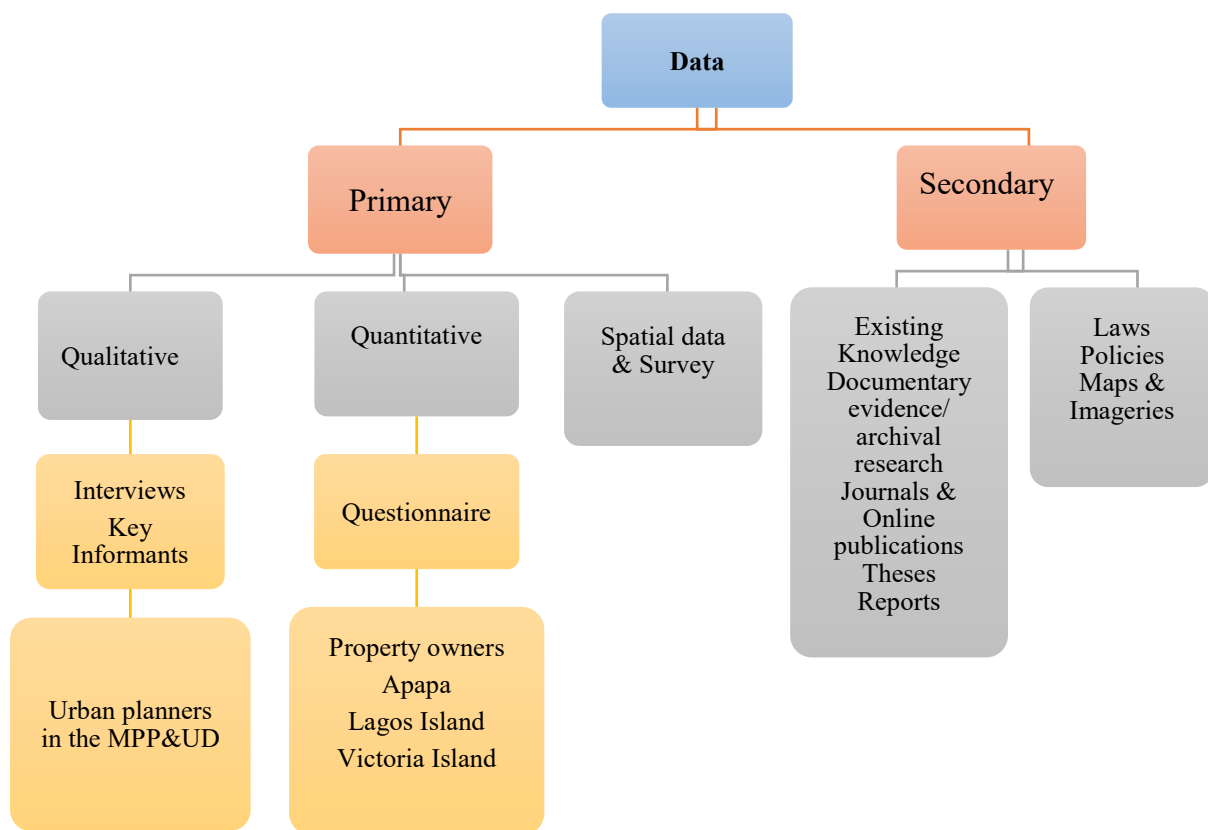
### **2.3.1 Secondary Data**

Secondary data provided background and existing information on the study. It was sourced from a review of literature and existing knowledge; published and unpublished literature; textbooks, journals, previous research work and Theses. Data was also sourced from Documentary evidence, reports, policies, legislations and photographs for inferential deductions. Thematic interpretation of models, theories and concepts of morphology and sustainable development was carried out. The conceptual and theoretical framework interpreted urban structure and design. It analysed its elements, scale and functions and the factors that determined morphology. It reviewed prominent studies of Kevin Lynch, (1960; 1982), *Theory of good city form and Image of the city*; urban space by Rob Krier, (1991); *Finding lost spaces* by Trancik, (1998); urban design by Moughtin, (2003), amongst others. The study also carried out an extensive review of urban form history from Banerjee & Southworth, (1990); Eisner, et al. (1993); Morris, (1995) and Pacione, (2009). These revealed the processes of urban development, temporal changing forms of cities and causal factors. Documentary evidence was also reviewed, including publications emanating from the Lagos State Government and its agencies (census data, reports, policies, legislation, photographs, and archival material). These helped to understand the urban land use patterns; characteristics of past and present land use form, the planning framework and requirements for the future of urban development.

### **2.3.2 Primary data**

Primary data was collected through field surveys; in-depth interviews and semi structured questionnaires on planning procedure, development control implementation and compliance. For the morphology, a time series analysis (1984-2015) showing temporal spatial variations in the Lagos mega city was carried out to show the impacts of development trends on the use of land within the time frame slums increased more than double as stated in the problems. Crucial indicators for sustainable development and design concepts in Table 2.1 were drawn from a review of literature on morphological studies; spatial relationships, urban form elements, figure ground plan-patterns and sustainable land utilization and development. Several Authors have postulated common attributes of sustainable city forms to include diversity, housing variety, maximal use of land, mixed use development, density and greening, (Lynch, 1960; Breheny, 1992; Coupland, 1997; Angotti & Hanhardt, 2001; Don

and Ray 2002; Daniel & Boshoff 2003; Kaido, 2005; Yosef, 2006; Jabareen, 2006; Duany, 2010; Cynthia, 2010; Clark, 2010; Echenique et al. 2012; Wai, 2012; Narvaez et al., 2013). They all agree that development is more sustainable if it produces a mix of uses with adequate carrying capacities of facilities for functionality, hence their relevance to planning policy. These indicators if adequately managed determine viability of development and quality of life; ensures smart/compact development supported by non-motorized transport systems thus creates vital, beautiful and liveable cities.



**Fig. 2.1:** Flow Chart Showing Data Sources and Collection Process  
**Source:** Author, 2018.

**Table 2.1: Observed indicators/Spatial Elements, Ground -Patterns and Relationships**

<b>Indicators</b>	<b>Definition</b>
<b>Land Mix</b>	<b>Use</b> This is the proportion of building use. A standard mix of various uses is a precondition for sustainable urban development and planning decisions. The concept stipulates more than one use, i.e., residential, commercial, recreation, institutional and transport are grouped together with consideration for compatibility and relevance.
<b>Plot layout,</b>	This includes the shapes and arrangement of building lots.
<b>Density</b>	This is the ratio of compactness, dwellings per unit area or developable land; Density is one of the most important indicators and design parameters in human settlement planning especially for high and growing urban population. Efficient utilization of land, facilities and services, sustainable urban forms require high densities of 70-100 dwellings per hectare, (Moughtin, 2003).
<b>Street / Road Layout</b>	This is determined by the concept of design such as grid, radial or circular layouts.
<b>Housing Variety</b>	This is measured using the percentage of the type of housing such as bungalow, multifamily to high rise buildings. The study identified types of buildings, classified 1-4 stories as Low-rise, 4-8 as Mid-rise and nine floors, and above as high-rise, (see Matrix in appendix).
<b>Building conditions</b>	This is the general state of the Buildings, compliance with set-back and state of dilapidation.
<b>Order, harmony aesthetics</b>	The concept of order in urban design is an attribute of a good city and fundamental to urban design. It ensures balance; all parts of the whole correspond with one another; synchronised and compatible.
<b>Open Spaces/public spaces</b>	A sensible city recognises and provides for all activities; hence urbanism approaches advocate for integrated open/public spaces for public use; provided and protected by law (Amin, 2008).

**Trees, Parks and Gardens** Greening is a growth management mechanism, Green infrastructure includes “open spaces, parks, trees, natural elements”; they “keep the environment serene, “preserve air, water quality and sense of place”, Neighbourhoods must be closely linked with greenways to achieve interior compactness. They are as mandatory as other facilities for sustainable city development. Campoli & MacLean (2007)

**Sanitation** General cleanliness and sanitation of the area.

**Condition of drainages** This is the general state of the drainages

**Pedestrian non-motorized Fac.** / These facilities include pavements, side-walks, bike lanes, pedestrian oriented development that encourages non-motorized transport; walking, bicycling, skateboards etc. for relatively short distances which make up the major part of trips in cities. It enables healthy living, amongst other benefits of affordability and environmental sustainability hence crucial for modern city planning. These facilities can help undo reverse the trending motorized systems that encourage urban sprawl.

**Condition of Road network** This is the general state of the roads, its surface conditions.

**Traffic Flow** Free movement of traffic without obstructions and hold ups, delays and waste of time. Permeability is the choice of movement the environment presents to users. Accessibility is achieved when people can reach the activities, resources, services and information they require with ease.

**Parking Structure** Provision for parking facilities based on the land uses in selected place.

Source: Author 2018

### **Spatial data –Mapping, Field surveys and inventory**

Instruments for spatial data collection includes Satellite imageries, base maps of the study area, photographs and direct observations. Remotely sensed images of the study area produced a time series analysis (1984-2015) showing temporal spatial variations in the Lagos mega city. Table 2.2 shows the details of the Landsat TM and ETM+ used for the land use analysis.

**Table 2.2: Landsat Data Sensor and Band Specifications**

Satellite	Sensor	Band No's	Spectral Range	Scene Size	Pixel Resolution (Meters)
L 4-5	TM multi-spectral	1,2,3,4,5,7	0.45 - 2.35 $\mu\text{m}$	170	30
L 7	ETM+ multi-spectral	1,2,3,4,5,7	0.45 - 2.35 $\mu\text{m}$		30
L 7	ETM+ thermal	6.1, 6.2	10.40 - 12.50 $\mu\text{m}$		60
L7	ETM+ Panchromatic	8	0.52 - 0.90 $\mu\text{m}$	x	15
L8	LDCM	1,2,3,4,5,6,7,9	0.43 - 2.29 $\mu\text{m}$	185	30
L8	LDCM Thermal (1&2)	10, 11	10.60 - 12.51 $\mu\text{m}$		100
L8	Panchromatic	8	0.50 - 0.68 $\mu\text{m}$		15
				km	

Source: Landsat Imagery 2015

Morphological and spatial attributes assessment was obtained from maps and field work/inventory. A coded inventory was used to assess the form (development patterns) of selected study areas (Lagos Island, Apapa, Victoria Island). Morphological elements observed with quality of the built environment are as outlined in Table 2.1. The coded inventory used simple score values to rate environmental quality and general spatial forms and patterns on a scale of 1 to 4; Very Good=4; Good =3; Average=2; Poor=1 accordingly as shown in Table 2.3 for an expected score of 44 points. These provide information with which to help make conclusions and the recommendations for the study.

**Table 2.3: Showing Environment Quality Scoring Codes**

S/ N	Variables	Coding	Max Scores
1	Housing Variety	Very Good=4; Good =3; Average=2; Poor=1	4
2	Building conditions	Very Good=4; Good =3; Average=2; Poor=1	4
3	Order, harmony	Very Good=4; Good =3; Average=2; Poor=1	4
4	Open Spaces –	Very Good=4; Good =3; Average=2; Poor=1	4
5	Trees, Parks and Gardens	Very Good=4; Good =3; Average=2; Poor=1	4
6	Sanitation	Very Good=4; Good =3; Average=2; Poor=1	4
7	Condition of drainages	Very Good=4; Good =3; Average=2; Poor=1	4
8	Pedestrian / non-motorized Fac.	Very Good=4; Good =3; Average=2; Poor=1	4
9	Condition of Road network	Very Good=4; Good =3; Average=2; Poor=1	4
10	Traffic Flow	Very Good=4; Good =3; Average=2; Poor=1	4
11	Parking Structure	Very Good=4; Good =3; Average=2; Poor=1	4
TOTAL			44

Source: Author 2018



### **In dept. interviews**

In dept. interview was conducted to key informants (Professional planners in the Ministry of Physical Planning and Urban Development MPP&UD) on the subject area to assess the effectiveness of urban planning policies and enforcement of development control mechanisms provisioned towards achieving the specified objectives and aim of study.

### **Semi Structured Questionnaire**

Semi Structured Questionnaire was administered to owners of properties, (Landlords) sampled from Community development association, (CDAs) for information relating to the approval and development processes. It focused on awareness, approval status, enforcements, land utilization and compliance; and perception on land use planning and administration in Lagos metropolis.

## **2.4 Survey Area, Population and Sample Frame/ Size Determination**

The population of study consists of all the landlords/house owners within the three selected local government areas (Lagos Island, Apapa, and Victoria Island) and planners serving at the various physical development agencies at the state and local levels of study area.

### **2.4.1 Survey Area Delineation**

Three local governments out of the 16 LGAs that make up the Lagos metropolitan area was purposively selected based on the representativeness of their spatial and functional characteristics, (See Table 2.4 and Fig 2.2). These local government areas; Lagos Island, Apapa and Eti-Osa are predominantly commercial, Port/ industrial and residential land uses respectively. These areas were further clustered into neighbourhoods based on their homogenous characteristics from which samples were drawn.

**Table 2.4: Selected Study Area**

<b>LGA</b>	<b>Land Area (in Km<sup>2</sup>)</b>	<b>Population (2006 Census)</b>	<b>Density (Inhabitant/Km<sup>2</sup>)</b>	<b>Characteristics</b>
Lagos Island	8.7	212,700	24,448	Central Business District
Apapa	26.8	222,986	8,320	Port/ industrial/residential land uses
Victoria Island	193	283,791	1,470	Residential/commercial land uses

**Source:** Adapted from NPC, 2006

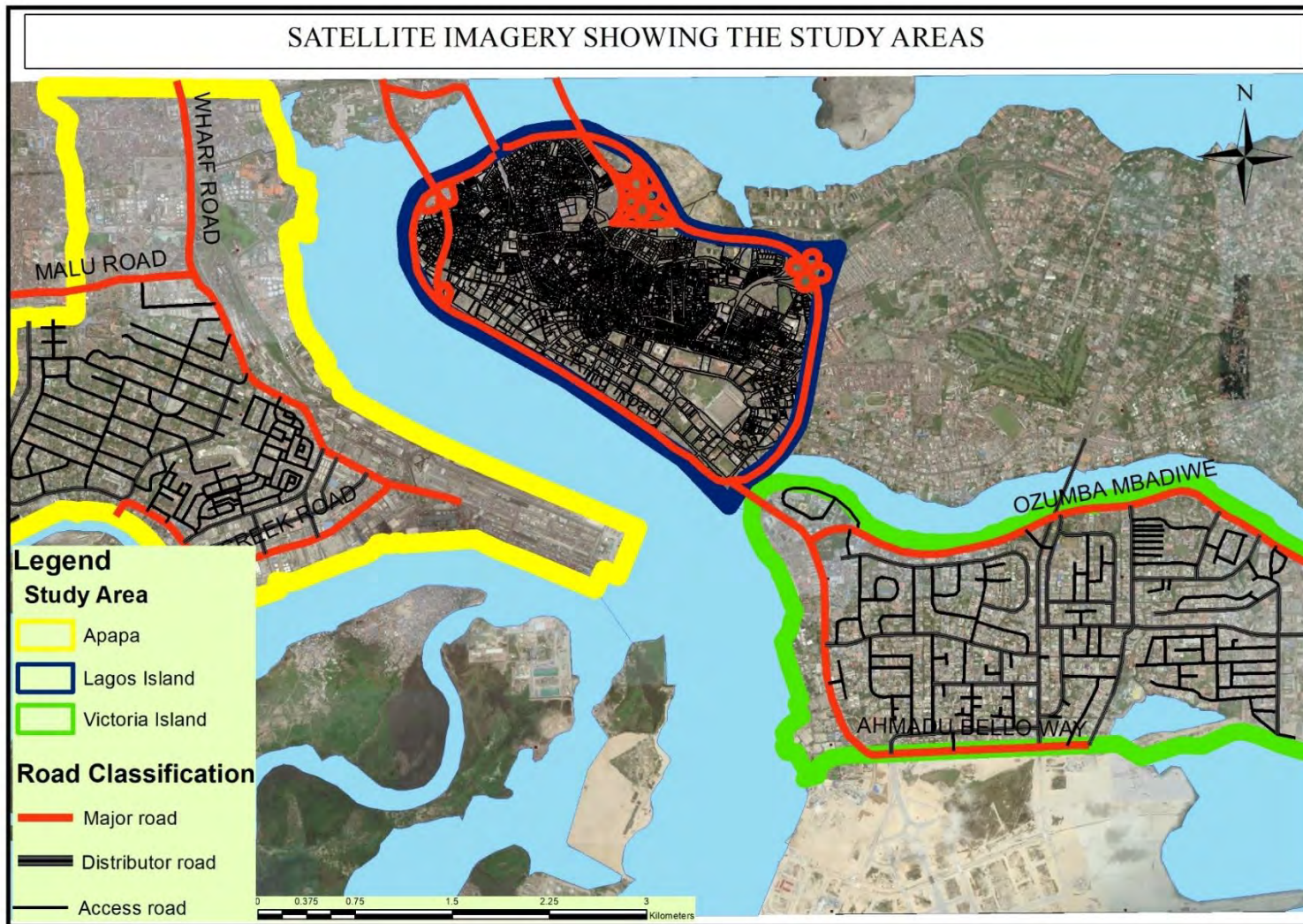


Fig. 2.2; Selected Case Study Areas in Lagos  
 Source: Author 2018; digitised 2016 Google image

A multi-stage stratified sampling technique was used to select streets in the study areas. Each study area was delineated into two clusters based on homogenous attributes; they share common facilities and environmental attributes. These comprised indigenous settlements of the Lagos Island (Isale Eko) and the CBD (Marina) which was the colonial land mark for Lagos Island. For Apapa the industrial/port land use and residential areas were delineated while Victoria Island was done based on dominant residential and commercial land uses respectively. The delineated areas of Lagos Island, Apapa consists of 125, 156 and 107 roads cumulatively as digitized from the map. Ten percent (10%) of the total streets population was randomly sampled for observations and data collection, (see Table 2.5 and Fig.2.3). Hence, 13, 16 and 11 roads were sampled based on a 10% representativeness. Main buildings on both side of these roads were mapped yielding 1004, 897 and 643 buildings for Lagos Island, Apapa and Victoria Island respectively. This procedure ensured that a significant representation of the entire study area for reliability and validity of data to avoid poor and unrepresentative generalizations.

**Table 2.5: Selected roads and buildings in study areas**

Study area	Number of roads	10% sampling	Number of buildings
Lagos island	125	13	1004
Apapa	156	16	897
Victoria island	107	11	642
Total			2543

Each street had three independent observers to avoid bias and subjectivity. Their observations were imputed the systems for the necessary filtering and statistical analysis to come up with descriptive values for conclusions. All three independent observers were trained and have good knowledge of spatial elements and indicators to look out for. To avoid confusion and carrying bulk paper on the field the study area and streets were coded as alphabets (A, B & C representing Lagos Island, Apapa, Victoria Island respectively) and numbers represents streets within the study area respectively as shown in Table 2.6

**Table 2.6: Coded Delineated Parts for Spatial Attributes**

LAGOS ISLAND		APAPA		VICTORIA ISLAND	
Street	CODE	Street	CODE	Street	CODE
Apongbon	A1	Marine Road	B1	Ahmadu Bello Way	C1
Marina	A2	Creek Road	B2	Ozumba Mbadiwe	C2
Broad Street	A3	Commercial Road	B3	Adetokunbo Ademola	C3
Balogun	A4	Burma Road	B4	Adeola Odeku	C4
Martins street	A5	Wharf Road	B5	Kofo Abayomi	C5
Nnamdi Azikiwe	A6	Liverpool Road	B6	Ajose Adeogun	C6
Adeniji Oyekan	A7	Park Lane	B7	Karimu Kotun	C7
Adeniji Adele road	A8	Point Road	B8	Akin Adesola	C8
Massey B	A9	Warehouse	B9	Saka Tinubu	C9
Oroyinyin	A10	Child Avenue	B10	Bishop Oluwole	C10
Onilegbale	A 11	Randle	B 11	Idejo	C 11
Enuowa	A 12	Doular	B 12		
Military	A 13	Oduduwa	B 13		
		Borno Cr.	B 14		
		Adele	B 15		
		Oniru	B 16		

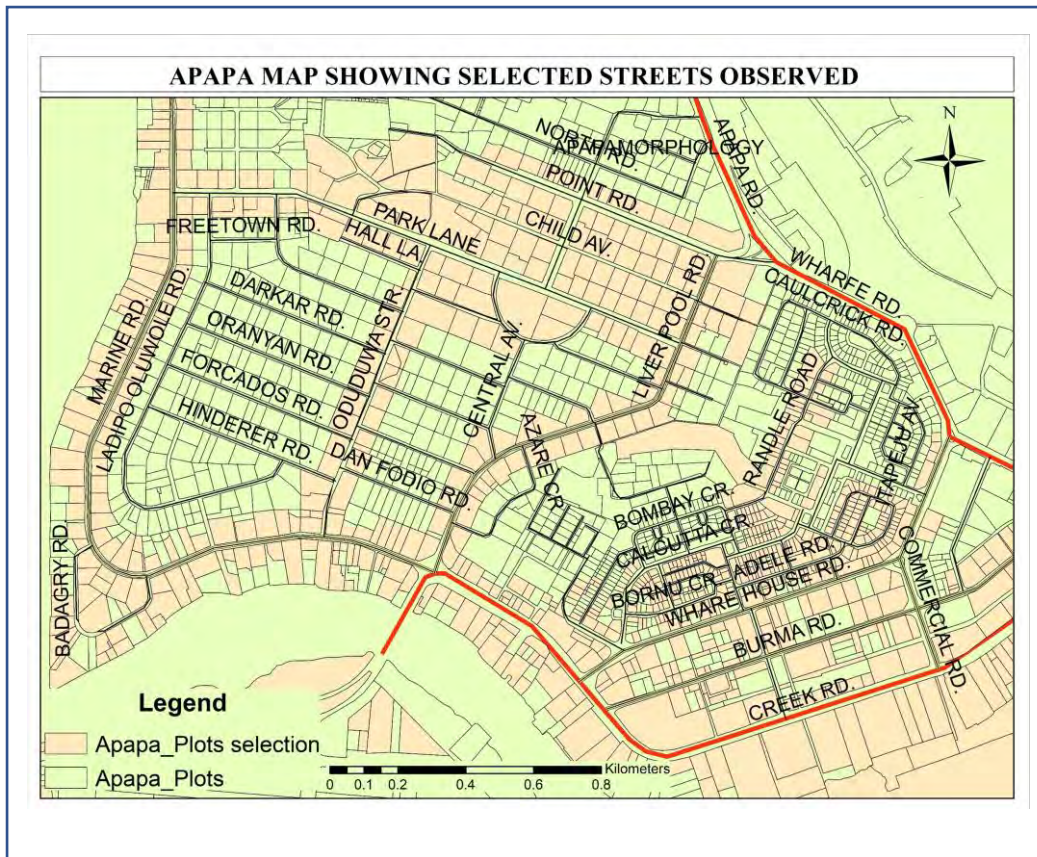
Source: Author 2016



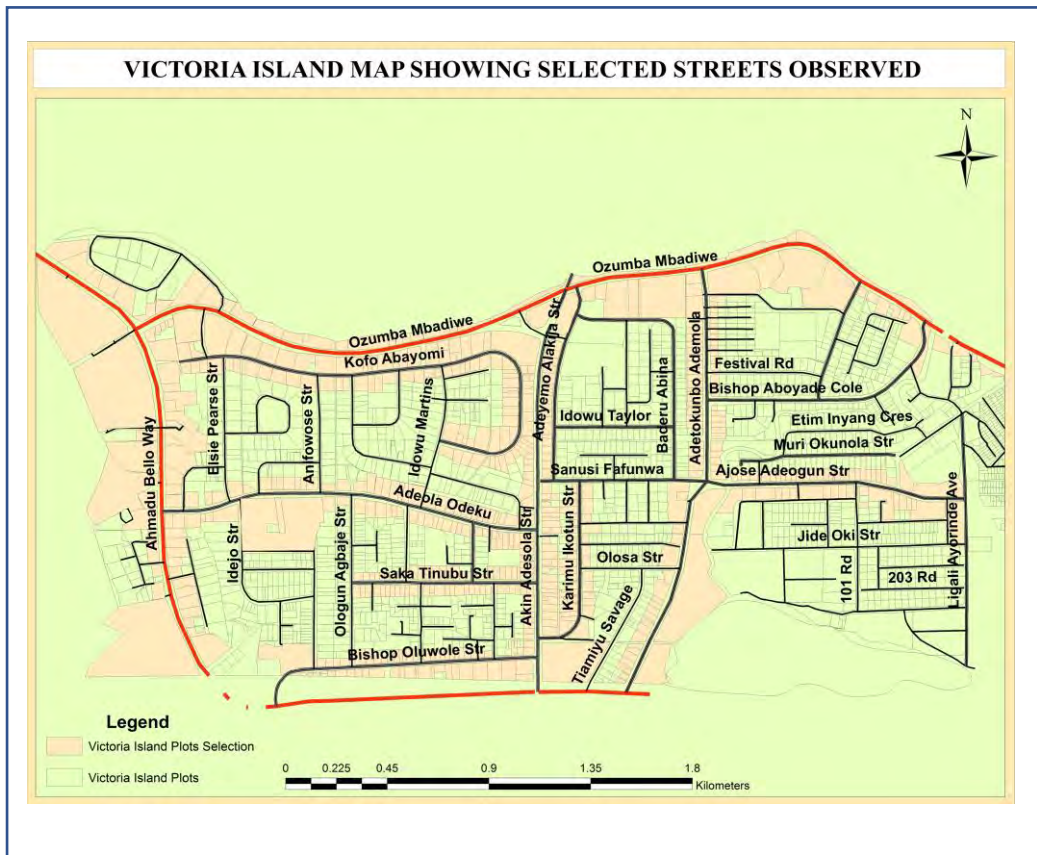
Fig. 2.3: Maps showing selected streets in Lagos Island

Source: Author 2018





Marine Road  
 Creek Road  
 Commercial Road  
 Burma Road  
 Child  
 Liverpool Road  
 Oduduwa  
 Randle  
 Park Lane  
 Point Road  
 Warehouse  
 Child Avenue  
 Adele  
 Payne  
 Emotan  
 Oniru



Ahmadu Bello Way  
 Ozumba Mbadiwe  
 Adetokunbo  
 Ademola  
 Adeola Odeku  
 Kofo Abayomi  
 Ajose Adeogun  
 Karimu Kotun  
 Akin Adesola  
 Saka Tinubu  
 Bishop Oluwole

Fig. 2.4: Showing selected streets in Apapa and Victoria Island  
 Source: Author 2018

## 2.4.2 Property Owners

Due to the dearth of information and database on property owners in the state and the fact that some landlords own multiple properties and do not necessarily live in their properties within the study area, a nonprobability samples of property owners were drawn from registered Community Development Associations (CDAs) within the study area. The CDAs are the platform on which owners of properties and residents meet every month towards initiating community-driven projects and deliberate on the general welfare of their Neighbourhoods; they are not exclusive to property owners. Each CDAs is structured, comprised of executive committees that also meet monthly on a committee platform at the local and state levels called the Community development committee (CDC).

Lagos Island, Apapa and Victoria Island have 27, 13 and 21 registered Community Development Association respectively. Each CDA is represented by three executives during the monthly Community development committee (CDC) meetings. This implies as shown in the table that at least 81, 39 and 63 stakeholders from the study areas meet monthly.

A pre-briefing of the study was scheduled with the executives of the CDAs after an application letter was written to obtain necessary gate keepers approval. Upon approval, an appointment was scheduled to purposively administer the questionnaire during their meeting. This way the researcher had access to landlords in one forum.

The snowball sampling technique was used to reach other property owners in which participant gives the researcher a referral to other property owners within the study area. This form of sampling is used to study homogenous groups; people who know each other through an association or common experience. The total number of questionnaires retrieved was 374; 105, 114 and 155 for the study as shown in table 2.7.

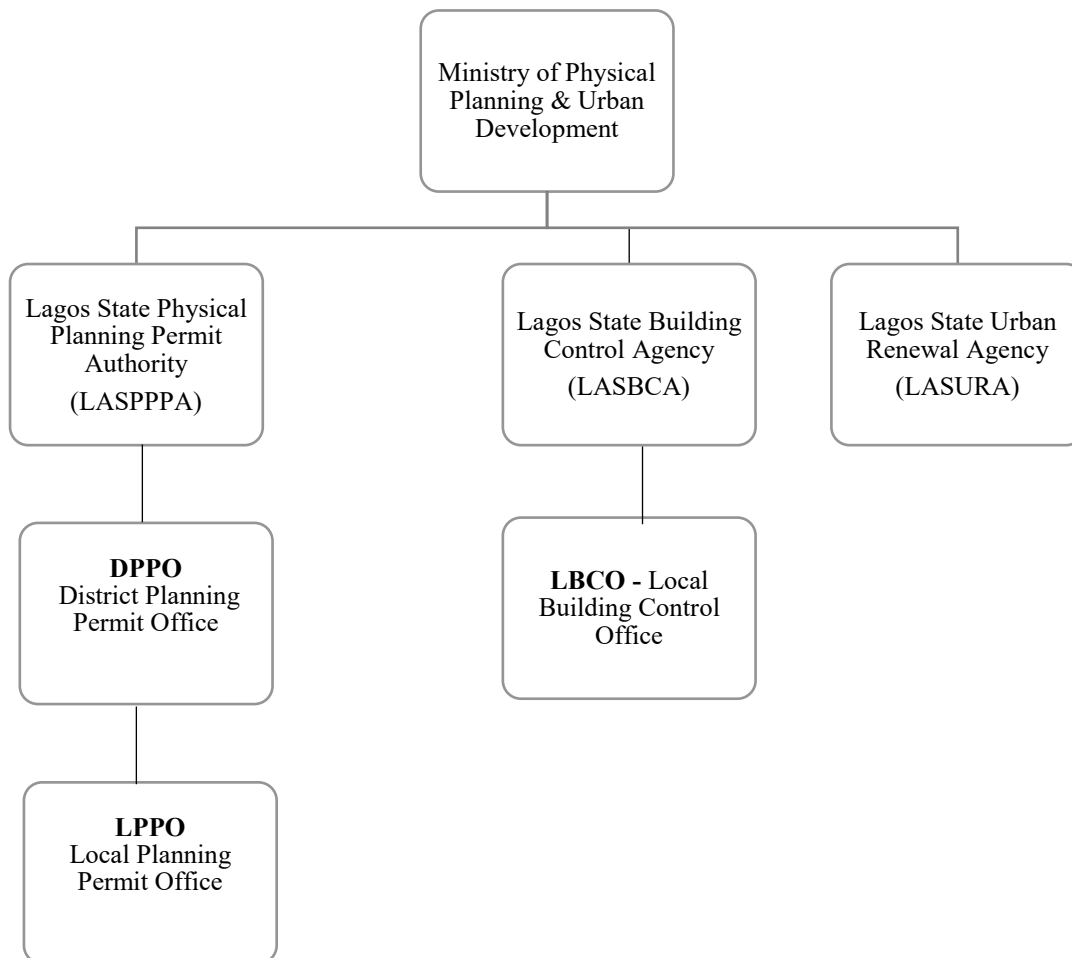
**Table 2.7 Showing Sample Size of Respondents**

Study area	Number of CDAs	Snowball sample Representatives of each CDA and Referrals
Lagos Island	27	105
Apapa	13	114
Victoria Island	21	155
Total	61	374

Author 2018

### 2.4.3 Key Informants: Professional Planners In the ministry of physical planning and urban development (MPP&UD)

The state; comprises 20 local government and 37 local council development areas. The Lagos State Ministry of Physical Planning and Urban Development and subsidiary agencies; Lagos State Physical Planning Permit Authority, Lagos State Building Control Agency, and Lagos State Urban Renewal Agency are represented at all these local levels of planning respectively as District Planning Permit Office (DPPO), Local Planning Permit Office, (LPPO), Local Building Control Office (LBCO) respectively as shown in Fig.2.4.



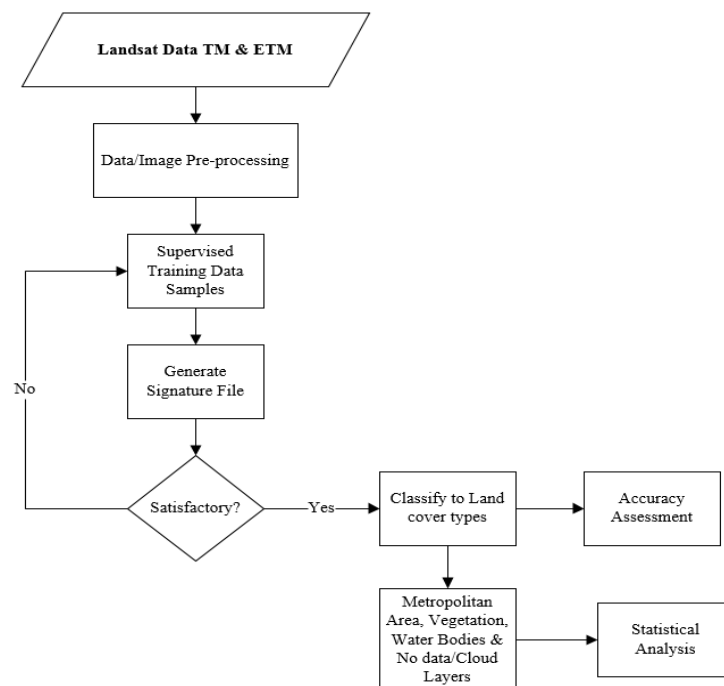
**Fig. 2.5:** Organizational Structure of the Lagos Physical Planning Agencies  
**Source:** Author 2018

Due to the fact the procedure of planning is known to them all, the key informant approach will be adopted where the people with most information about the subject is interviewed. This approach does not require a probability sampling technique.

Therefore, six planners were chosen based on the organizational structure of the ministry from agencies as outlined in Fig.2.4. The sessions consisted of open-ended questions relating to plan approval; change of use; criteria for approval; monitoring, compliance, enforcement and other issues on land use and development. Appointments were made to interview the officials at their convenience during work hours between 8.00am and 4.00.

## 2.5 Data Analysis

The assessment of urban expansion in the Lagos metropolitan area involved classification of multispectral data. The simplified process of classification performed on multispectral data is shown in Fig. 2.5. Supervised classification was used to extract information from the raster image to generate thematic maps using the spectral signatures obtained from training samples. The procedure was used to process and classify the multispectral data towards the assessment of urban expansion in the Lagos metropolitan area. This is done to distinguish multiple objects in a remotely sensed data; the process involves defining classes based on spectral features. Features in the study area were classified based on the knowledge of the user, the understanding of the spectral data by selecting training areas (knowledge on what is on the ground) and digitized a polygon within the area.



**Fig. 2.6:** Simplified method for supervised image classification (1986, 2006 and 2015)  
**Source:** Author 2018



The method used samples of known identity assigned to pixels of unknown identity, (Campbell and Wynne, 2011). The pixels within the training samples are used in guiding classification algorithm to allocate special spectral values belonging to informational classes. ENVI software for image processing and ArcGIS 10.3 was used for image analysis and mapping. The WGS\_1984\_UTM\_Zone\_31 projections were used. The files were converted to vector format after which the spatial extent was calculated, each pixel size of 30m resolution.

For figure ground analysis, Analogue Base maps of the study area were converted to compatible formats. The maps were scanned and geo-referenced using LAT/LONG (XY) coordinates recorded from evenly distributed control points using a GPS (Geographical Positioning System). The geo-referenced maps were projected to GCS\_WGS\_1984. Thereafter, they were digitized to create shape files in Arc catalogue. The observed and recorded spatial attributes from the field survey were imported into the GIS for attribute query and thematic mapping. Thematic map layers were generated, and the results obtained were analysed using queries and tables. These show figure ground relationships and the general morphology of the city.

Descriptive and thematic analysis of qualitative data was carried out. These provide summary and interpretation for the data from where the researcher made inferences. The analysis of the qualitative data (words or text or images) typically follows the path of aggregating the words or images into categories of information and presenting the diversity of ideas gathered during data collection, (Creswell, 2006).

The Statistical Package for the Social Sciences (SPSS) was used for descriptive analysis of quantitative data for deductions and conclusions. These includes simple statistics used to summarise and review data using average values of variables as may be required and relevant towards achieving aim of the study. The analysis is presented using tables.

## **2.6 Pilot Study**

A pilot study was conducted to test the structure and the adequacy of the questions and their ability to provide information that could assist in determining the challenges encountered during the processing of development plan approvals. It also determined the type of sampling that was used. A probability sample was not as successful as there was no population for property owners hence the use of purposive sampling.

## **2.7 Research ethics- Confidentiality and consistency**

The researcher adhered to basic ethical tenets by acquiring ethical clearance after being given the relevant gate keepers consent from the respective Government Institutions, Ministries and Community Development Association to be interviewed. The study considered the protection of respondents from any direct or indirect impacts. Respondents were briefed on their right to discontinue should they decide not to further participate without any loss or disfavour. They granted informed consent to participate in the study and were assured that all information provided are treated as highly confidential. The researcher ensured consistency in the process of the interview to avoid deviation from the subject and scope of the study.

## **2.8 Conclusion**

This chapter presented a detailed description of the methods used to conduct this study. The pilot study and the main data collection, trained research assistants distributed and collected the questionnaires, while all the interviews were conducted by the researcher. Table 2.8 outlines systematically the research questions and the required methods and data towards achieving the objectives and the overall aim of study.

**Table 2.8: Detailed Outline of the Methodology**

This section gives detail of the specific methodology employed to achieve the objectives of the study.

<b>Aim</b>	The study aimed to examine the morphology of the Lagos mega city and the impacts on the use of land to develop a Model for land use optimization with effective control mechanisms.		
<b>Key Question</b>	What is the morphology of the Lagos mega-city and what are the implications on the use of space and environmental sustainability?		
<b>Research Questions</b>	<b>OBJECTIVES</b>	<b>REQUIRED DATA</b>	<b>METHOD OF ANALYSIS.</b>
<b>What is urban morphology and how does it relate to sustainable development?</b>	To carry out a thorough description of the concept of Morphology (land use and pattern of development) in relation to sustainable development.	Secondary data Literature review	Thematic Descriptive
<b>What is the trend and problems of the use of space in the Lagos mega city?</b>	To evaluate the trends (historical/ land use dynamics) and problem associated with the use of space in the Lagos mega city	Secondary and primary data, Maps, Photographs Literature	Thematic descriptive and Spatial /Visual
<b>Did changes in administration, functions and urban growth impact the use of land?</b>	To investigate how changes in administration, function and urban growth impact on the use of land and city form.	Secondary and primary data Literature, maps and Interviews	Thematic/descriptive and discourse
<b>What is/are the planning framework/frameworks in the city and how have they provided for changing and multiple city functions over time?</b>	To analyse the approaches of spatial organization, urban planning and the principles of achieving sustainable built environment.	Secondary and primary data; Literature Review of laws & regulations; Interviews	Thematic/descriptive analysis
<b>What techniques are used in urban planning, development control and enforcement?</b>	To identify the techniques used in urban planning, development control and compliance.	Literature Interviews Review of laws & regulations	Thematic/descriptive and Spatial analysis

	.		
<b>How effective have urban planning, governance and management been?</b>	To examine the effectiveness of urban planning laws and regulations, governance and administration and how the changed or adapted over the years towards addressing the urban planning and development challenges	Literature Interviews Review of laws & regulations	Thematic Descriptive
<b>What is/are the impacts of poor morphologies and planning on the use of space?</b>	To analyse impacts of growth patterns (morphology) through land use mapping and figure ground analysis.	Maps Pictures Surveys	Thematic descriptive and Spatial /Visual
<b>What are the policy implications of the study's findings for sustainable urban land use?</b>	To proffer policy recommendations towards sustainable city development	Recommendations for effective development control towards Sustainable development	Policy Recommendations

Source: Author 2018

## CHAPTER THREE

### THEORETICAL AND CONCEPTUAL FRAMEWORK

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#### **3.0 Introduction**

A thorough understanding of the environment is required to secure pathways for planning, designing and developing sustainable Cities. This chapter defined the environment, classified based on size, function and form. It reviewed spatial and non-spatial theories of morphology and planning.

#### **3.1 Place Theory: Definition and Classification**

Place is a location in space where human activities takes place, work, play and live; (Pacione, 2009). Norberg-Schulz, (2006) defined the environment as place; perceptions of place vary across interests and experiences (Adams & Watkins, 2014). The structure of a place is not a fixed eternal state (Norberg-Schulz, 2006). Rather, forms are continuously transformed as urban areas grow in response to needs, such as demand for living spaces, and other uses required by its inhabitants, (Pekelharing, 2008). Places are settlements that occur on different scales, have a different structure and are subject to change; hence every city has its own inner pattern, either organic or planned (Banerjee & Southworth, 1990).

The environment comprises of either temporary or permanent settlements. The lifecycle of temporary settlements centred on the needs that brought about their existence; they are occupied for a few days or months and may be vacated as required. This is true of nomads and shifting cultivation; Refugee and relief camps can be considered. On the other hand, as their name implies, permanent settlements developed for permanent residence and habitation. The size and function of settlements determines their status as either rural or urban.

Rural settlements take the form of farmhouses, hamlet and villages, while urban settlements may be grouped into towns, cities, or conurbations. Both categories are classified according to size, function and form.

The criteria for the classification of places differ amongst disciplines, nations, and across cultures and time. Places are classified or grouped based on their attributes, location, qualities, functions or resources; they are built around growth poles and/or central places. Most cities have more than one of these attributes at any given time but the classification is based on those with the strongest influence on the city's growth, development and sphere of influence. However, some cities have multiple attributes and resources that qualify them for

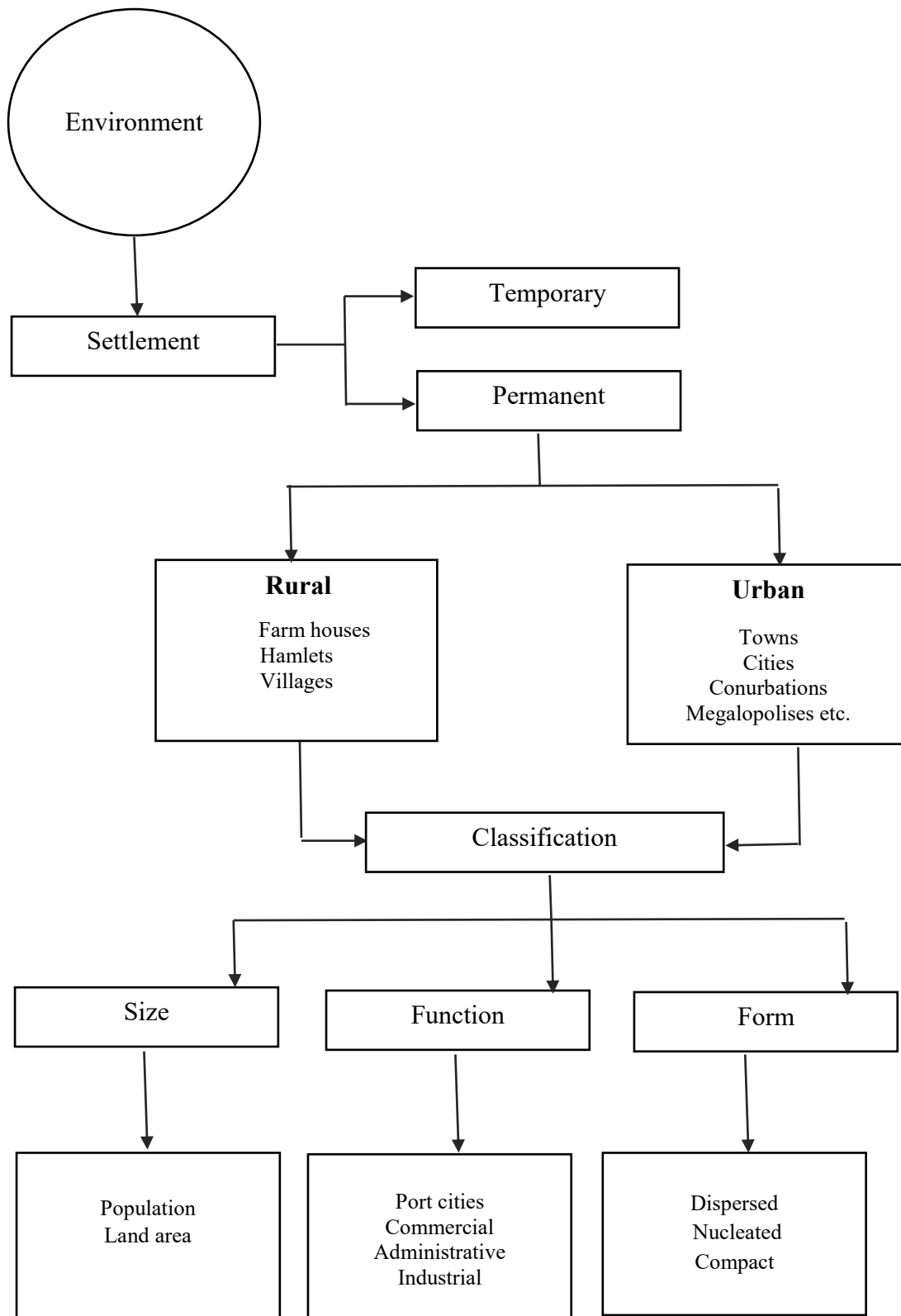
multiple classes like the Lagos mega city.

Settlements qualify as rural or urban based on population, economic, administrative, and functional definitions. Eisner, et al. (1993), defined Urban area or urbanism in several ways; key words include, “congregation or union of neighbouring clans; composite cells or Neighbourhoods; common meeting places; location for diversified opportunities; communities where people work together for their common good”. They are places where people live work and enjoy themselves; have social and cultural relationships; worship, protection, and meeting places, governed and administered by political system put in place by the community, he further stated that urban areas vary with functions, size, complexity attributes. This means that there are as many types of urban areas as the activities performed and as determined by size and complexity.

Population size considered as urban is varied which makes it difficult for international comparison; Sweden, 200, America 2500, Switzerland 10,000 and 30,000 in Japan, (Pacione, 2005). Urban places are further classified based on their scale of urbanization, growth, population, sphere of influence and as polycentric or monocentric. Conurbations and megalopolis are super cities with minimum population of 10 million and 25million respectively, hence Lagos is classified as a mega city based on its population. With the growing population and rates of urbanization, bigger city forms are predicted for the future. This qualifies Lagos megacity as the largest city in Africa and among the top ten in the world despite its small spatial size.

The urban environment is the opposite of the natural or rural environment; many people, socio-economic activities and supporting infrastructure are concentrated within its boundaries. Mega-cities are large areas of urban development, agglomeration, and conurbations. High agglomeration of large and heterogeneous populations and consequently suffer environmental and social consequences in the form of housing shortages and inadequate carrying capacity. This has led the development of inner-city slums and improvised, unplanned settlements sprawling on the outskirts of mega-cities.

Other arguments for places are the emergent spaces due to the implications of technological and social change for patterns of human interaction, the placelessness of many new forms of activities brought about by the ICT, the internet and globalization, (Pacione, 2005). Fig. 3.1 and Table 3.1 show classifications of settlements by population size, function and form.



**Fig. 3.1:** Conceptual framework of settlements classification  
**Source:** Arthur 2018

**Table 3.1: Cities Classification by Size**

<b>Class</b>	<b>Description</b>	<b>Population Size</b>
Megalopolis	Large agglomeration of conurbations.	10 million +
Conurbation	A group of large cities and their suburbs that have strong links connecting them to each other.	-10 million
Metropolis	A city and surrounding towns that is in proximity and has started to merge into each other.	1-3 million
Large city	. A city with a large population and many service	300,000 - 1 million
City	A city would have a wide range of services but not as many as a large city	100,000-300,000
Large town	Large towns now see a much more varied range of shops available when compared to villages.	20,000-100,000
Town	Towns see an increase in services, for example, they would have senior schools and police stations.	1,000-20,000
village	Have some basic services	00 - 1,000
Hamlets	Hamlets have very tiny populations and few services, if any.	< 100
Isolated dwelling.	Isolated dwelling often in rural areas, these tend to be farmhouses or holiday homes.	few buildings

**Source:** Author 2018

Functional classification is purely qualitative in nature. Due to their location or topographical and growth factors, cities tend to specialize in certain functions. Hence, different cities perform port, capital, commercial, industrial, or administrative, etc. functions. They specialize in functions that best suit their locations and resources. The location of cities by the sea led to the development of port, transit, tourism and commercial cities, etc. Global cities are hubs of commerce and trade. Having served as centres of political power and the seat of the national administration and governance, they host institutions of varying calibre and functions and have a concentration of transportation facilities network.

The Lagos metropolis qualifies to be ranked amongst global cities such as New York, London, and others. Since there is no agreement on what constitutes world cities, this study considers the largest city in each country as a surrogate for a world city as defined by various organizations using socioeconomic, political and cultural criteria (Tabuchi, 2013). As its name implies, a capital city is a country's administrative centre and in most cases the seat of government. The Lagos metropolis was the capital city, a centre of commerce and political administration. The multiple functions of the metropolis brought about growth, concentration of facilities and development. The capital was moved to Abuja in 1991. Table 3.2 presents a list of selected cities across the world by function.



**Table 3.2: Selected Cities by function across the World**

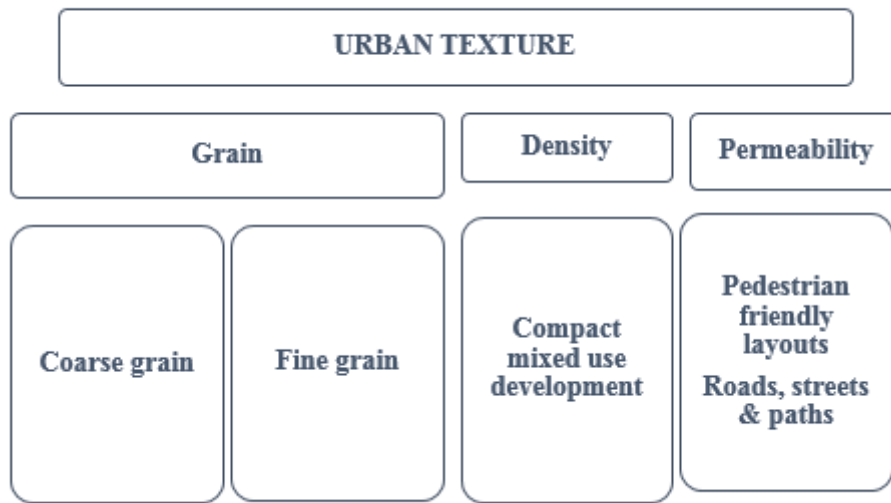
Country	Capital cities	Port cities
United Arab Emirates	Abu Dhabi	Jebel Ali
Nigeria	Abuja	Lagos
Ghana	Accra	Accra,
Netherlands	Amsterdam	Amsterdam/Rotterdam
Germany	Berlin	Hamburg Bremen
England	London	London/ Portsmouth
Kenya	Nairobi	Mombasa
France	Paris	Marseille; Le Havre
South Africa	Pretoria	Cape Town /Durban /Port Elizabeth
Singapore	Singapore	Singapore
Austria	Vienna	Vienna
United States	Washington D.C.	South Louisiana and others

**Source:** Author, 2018

Settlements come in different spatial forms and patterns as may be determined by natural topology or as designed and built. Architectural style, design and appearance of individual buildings contribute to urban form, Montgomery, (1998). The natural factors influenced early prehistoric cities (cities evolved around fertile lands). They occur as dispersed, nucleated and linear as determined by the natural feature combinations. Dispersed forms of settlements occur when buildings loosely spread out in upland areas. Its buildings are scattered and forms no particular patterns or organization. Most times this is because development is restricted by topology. These types of human settlements occur as rural settings with little population and drive to expand. In Nucleated settlements, buildings are grouped together and closely knit around a point of growth, power or worship while linear settlements as depicted are secondary settlements that evolved after features such as roads, rivers, canals etc. They lack depth, a distinct centre and are not big sized settlements; its growth is restricted to the size of the feature it trails. Naturally, Lagos is classified as a port or coastal city given the location along the Atlantic Ocean.

The urban form has attributes distinguish by topography and the forces of growth and development. Size, density, and pattern are basic aspects of a city's physical form that determines the urban texture and quality of life it offers, (Fig. 3.2). Decisions relating to these factors are becoming more complex and urgent as humankind rebuilds and enlarges its environment. The metropolitan form is measured by the magnitude and pattern of both structural density and condition, which is the general land utilization, expressed in Floor Area Ratios (FAR) while the condition is qualitative, (Banerjee & Southworth, 1990). It also

includes the capacity and patterns of facilities for the circulation of people; the city web and pathways of all types and classes.



**Fig. 3.2:** Urban Texture Model

**Source:** Author, 2018

Density is the ratio of population to space, mainly relating to the compactness of people in different geographical scales and space. When high population are accommodated in planned development compact development is said to be achieved. There is need for critical planning towards achieving appropriate densities without creating congestion, chaos and failing infrastructure.

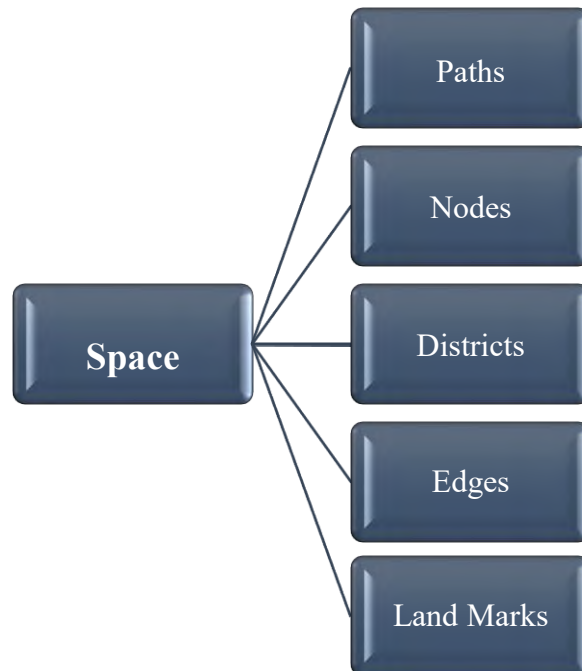
Grain is the distribution of activities (Tsai, 2005). It has to do with the arrangement of the city parts and specialized use of space. Hence, land subdivision and activity location determine the functionality of a city. The planner must start by drawing up plans for proportional use distribution to create harmonious and functional environment. This should be taken into consideration in urban design as failure to consider these might result in planning for urban decay and congestion.

### **3.2 Urban Form Configuration: Linkage, Figure ground and place theories**

The elements of urban form theorised by Lynch, (1960) are paths, nodes, districts, edges and landmarks, (see fig 3.3). Paths are channels of movement of different types, classes, hierarchies and capacities. They include streets, walkways, transit lines, canals and railroads and others. (Lynch, 1960). They link other elements and land uses; hence a primary

structuring element of physical form (Moughtin, 2003; Norberg-Schulz, 2006).

Nodes are “the strategic foci”; central points related to paths, places of intersections and activity. They are public land uses; meeting places, markets and hub of transport, (Lynch, 1960).



**Fig. 3.3:** Elements of Space

**Source:** Author, 2018

Districts are divided into quarters; they comprise medium to large sections of the city that are two-dimensional. They possess certain attributes different from the general environment that give a district its identity, (Lynch, 1960).

Edges are points of reference; they are the linear elements, (Moughtin, 2003). (Lynch, 1960: 47) described them as “the line between two areas having different features from each other”. This may be natural boundary like rivers, topography or artificial form such as greenbelt, waterfront, highway; It is the degree of distinction between two districts through their unique features, (Lynch, 1960).

Landmarks are external features, usually static unique objects, structures or geographic features or landscapes with distinguished attributes which can be easily recognized. They are reference points though varied by individuals’ cognitive ability. They are distinguished by their physical attributes, (Lynch, 1960).

The relationship between a settlement’s elements yields specific landscapes and forms

(Lynch, 1960). They determine a figure ground relationship expressed in shape, texture and colour, (Lynch, 1960). The forms of cities determine many aspects of urban living; The ordering of elements determines the land use pattern and physical identity of a city; a sustainable city comprise elements in proportions that enhance functionality, general wellbeing and increased opportunities for community living (Amin, 2008). This is important when planners make decisions on land use and urban development.

Trancik, (1986) conceived the relationships that exist between the city elements using linkage, figure ground and place theories.

The linkage theory explains the lines (Paths) connecting one element to another. These lines are formed by streets, pedestrian ways, linear open spaces or other linking elements that physically connect the parts of the city. The figure ground theory is founded on the relationship between the land coverage of buildings as a solid mass to open voids (ground). The Place Theory adds the components of human needs, and cultural, historical and natural contexts. Trancik, (1986) emphasizes that, while each of these theories has its own value, the best option is one that draws on all three, organizing the links between parts and responding to the human needs and unique elements of the environment. The theories differ significantly from one another, but together they provide potential strategies for integrated urban design. These relationships illustrate the structural interrelationship that Lynch, (1960, 1982) theorised in the Image of the City and the Theory of Good Urban Form.

### **3.2.1 The Linkage theory**

The square and street were the first ways in which people used the urban space; they defined and provided access to urban functions (Krier, 1991). The street provides the layout of the urban space; it distributes land in standard parts, shapes and sizes as stipulated by law or policy or as may be required for its proposed use. The Linkage Theory explains the urban form using the transport network comprised of various hierarchies and types of roads and a paths network connecting the various buildings and open spaces in the city. Salingaros, (2005) illustrated this using the urban web as a means through which the solids and voids relate. Factors that may determine these relationships for which urban planning must consider are size, function and form of the settlement. This implies that there cannot be an organised or effective urban fabric if the linkage system is inadequate or non-existent as in the case of the Lagos metropolis which is being developed without an adequate transport or urban web

master plan (Abiodun, 1997). In this approach, the dynamics of circulation become the generators of urban form.

Several linkage patterns can guide the development of an outlay of the urban fabric, ranging from the axial to the grid systems of networks. The axial pattern developed in early times in Egypt and Babylonia seems to have been designed for religious processions as a very simple linear arrangement that could be expanded into a spindle consisting of a bundle of parallel roads (Banerjee & Southworth, 1990). The predominant street design is the ancient grid; it is universal, easy to lay out and provides equal rectangular building sites that allows a referencing system for easy location. The motive for choosing the grid may be philosophical or utilitarian, either to promote or achieve regularity and harmony or reduce the cost of building and enhance convenience as in the case of Peking and Manhattan, respectively (Banerjee & Southworth, 1990).

Designers have critiqued the grid due to its lack of adaptability and monotony, and the fact that it creates difficulties on irregular ground. These components all are basic aspects of the city physical form; which either singly or cumulatively affect the quality of life within its boundaries.

### **3.2.2 The Figure Ground Theory**

The city is a mosaic of space held together by social bonds and economic conditions (Arthur & Simon, 2005); its smallest cells or units are the plots and buildings from which the urban structure is built (Curdes, 1993). These are individual parcels of land together with their buildings or open spaces (Arthur & Simon, 2005; Moudon, 1997). Demand regarding the size of plots and buildings changes over time; the physical characteristics of the cell define prospective use and the volume of development it can accommodate, (Curdes, 1993). This illustrates the complexity of the physical form at various scales and assists in understanding the ways in which towns have grown and developed; it helps to appraise the success or failure of plans (Larkham, 2005; Rodrigue et al. 2009). Urban design specialises in different aspects of development; it considers the components to effectively synthesis into place making

The city form is determined by the way its elements are organised; it is a product of the relationship between land uses, and the components of size, shape, density and compactness, amongst others. Cities are to be planned in such a way that these relationships are not distorted. The generic structure of an urban form is divided into distinct independent

hierarchical levels, patterns and structure (Kropf, 2005). The urban fabric has weaknesses and strengths, and limits and potential depending on the way it is managed; therefore, an understanding of internal structure is essential to urbanism.

The figure ground theory is based on the relationship that exists between buildings and open spaces and the urban fabric in general, (Trancik, 1986). It explains spatial relationship; the grain and organization of the urban fabric as well as problems, hence its relevance for urban studies, (Kropf, 2005). Banerjee & Southworth, (1990) note that an imbalance among these elements may lead to monotonous and restrictive development; hence decisions must promote urban development and revitalization (Sarkis et al. 2008). This implies that if these elements do not adapt, and exist in harmony, proportion and scale, a chaotic place is the likely result (Moughtin, 2003). The quality of the city form is determined by its ability to cope with changing needs and values of users; a rigid city image cannot meet these demands. This points to the relevance of planning which is capable of shaping places while seeking to balance priorities and the impacts on people (Norberg-Schulz, 2006). Krier, (1991) organised spatial forms into three main groups of geometric patterns which can be simulated into a series of shapes and patterns; regular or irregular.

Such patterns provide a wealth of spatial forms from which planners can learn and adopt. In recent decades, debate on sustainable development, emergence of planning trends, and the influence of disciplines of urban design and morphology have drawn attention to urban form, (Anas et al. 1998; Oliveira& Pinho, 2010).

### **3.3 Theories of Cities' spatial structure**

As its name implies, the theory of city structure explains cities forms and functions. The theory's assumptions about structure and function deal with wide-ranging connections between human values and settlements form. These theories collectively explain the dynamics of the physical environment alongside planning decisions, process and methods.

The morphology and evolution of cities has been extensively studied for centuries, leading to various conceptual constructs relating to urban land use (Luck & Wu, 2002). The development phases have all witnessed land use changes of various magnitude, due to factors ranging from agriculture, to industrialization and wars. Descriptive and analytical models have been used to explain urban land use over time with increased levels of complexity and consideration for transport, economics, land rent, and market, etc. (Rodrigue et al. 2009).

The classical theories of Burgess (1925), Hoyt, (1939), Harris, and Ullman (1945)

generalized the arrangements of urban land use in the industrial cities of the United States. They illustrated the geographical submarkets of land and the varying characteristics of land and property on an urban and regional basis (Adams, 1994). Economic theories unveil the decisions behind land use and the pattern of development (Aurand, 2007).

Von Thunen's agricultural land rent and Alonso's urban land rent theories dominate land use change studies and modelling because economic factors remain the principal drivers of changes in land (Briassoulis, 2008). Von Thunen used economic rent to explain location and spatial organization while the growth pole theory and central place theory hypothesize that location of activity, services and resources influence urban forms.

The growth pole is the theory that other functional theories draw from; this is because the study of cities is the study of settlements and every settlement evolved from a growth pole. As its name suggests, the central postulation of the growth pole theory is that economic development or growth is not uniform over an entire region but takes place around a specific pole or cluster which is often characterized by core industries around which other industries cluster to benefit from infrastructure, proximity to common services and compatible operations (Rodrigue, 2009).

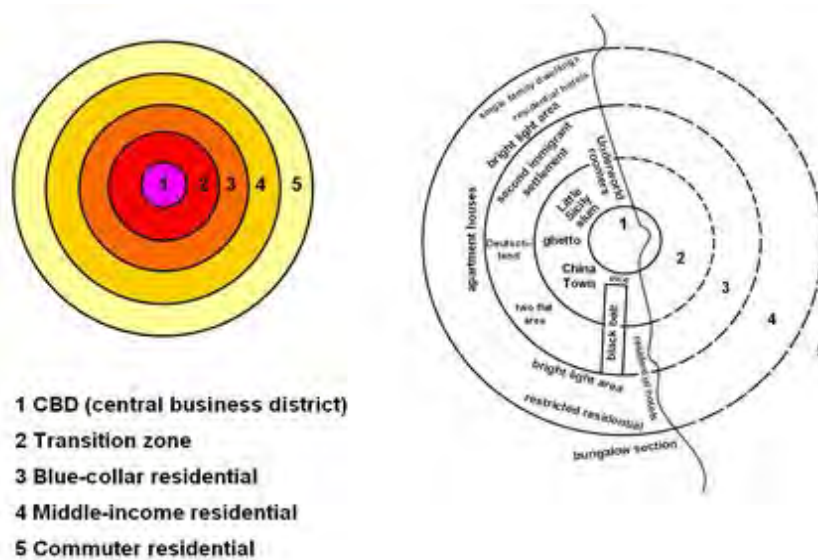
Sustainable urban forms depend on good planning, design and understanding of the dynamics that shape them. These theories were critically reviewed and examined from a pragmatist point of view since societies are not machines that require replacement of parts when faulty (Lynch, 1982); rather, they are open systems in which the same conditions are rarely reproduced. They provide guidance to planning for smart growth and generally sustainable development.

Cities have both internal and external structures and patterns of growth and development. These are relevant to the study of morphology to unravel the factors that result in sprawling and outward expansion of cities that distort them. Traditional models of urban structure focus on the structure of towns, emphasizing the relationship between different urban zones and the centres and with one another. Although they share similarities, the spatial configuration which they propose differs markedly, (Steiss, 1974).

### **3.3.1 The Concentric Zone Model (Burgess, 1925)**

The Concentric Zone Model by Burgess in 1925 illustrates the growth and internal structure of mid-20th century American cities; it explains urban growth as a continuous development and change of land uses (Rodrigue, 2009). The model denoted cities structure by a set of six

concentric zones; due to growth, each invades the next outer one, (Fig. 3.4). Thus, it reflects the concept of invasion and succession in city growth and the urban development process (Imimole, 2005). The model uses household income and distance from the CBD as variables to determine the relationship between distance from the CBD, the quality of housing, and commuting time and cost. It reveals that housing, convenience and social status improve with distance from this core. This model represented the poor spatial patterns of American cities in the transition zone at a time when there was a constant struggle between expansion and containment (Banerjee & Southworth, 1990).



**Fig. 3.4:** The Concentric Zone Model

**Source:** [http://cronodon.com/PlanetTech/Earth\\_cities.html](http://cronodon.com/PlanetTech/Earth_cities.html)

The CBD is the heart of the city, the hub of commerce and employment. It is the growth pole around which other zones emerge; the zone of reference that influences the growth pattern, rent value, transports, and inner-city housing. It is a zone of high land value and maximum use of space. The Lagos Island represents this zone in the Lagos mega city, being a centre of business and attraction.

The CBD is a mixed-use zone of densely concentrated multi storied buildings, parks and recreation places, open spaces and prominent cultural and public land uses for meeting, recreation, social and political gatherings etc., one of such is the Hyde Park, The Hyde Park is Australia's oldest park with rich background and influence upon how the city of Sydney has developed, (Hyde Park: Plan of Management and Master plan, 2006). The 16 hectares' park,



Operational 24 hours is sited on a reserve dedicated for 'public recreation and it is intensively visited and used throughout the year by local, interstate and international visitors.

South Africa's CBDs are headquarters of companies, as well as convention centres, and the cities' tallest buildings. Cape Town is known for having South Africa's most iconic skyline. The Durban CBD has high skyline with dominating commercial activities, malls banks etc. The CBD has pedestrianized parts and have an open space for social gathering, meetings, or just recreational or leisure activities. It has spaces for cultural integration, informal trade and a park. The Lagos metropolitan city developed the CBD without consideration for the particularly unique attributes of CBD. The degenerated CBD can be built based on gentrification and urban revitalization and renewal programmes with consideration for the functional attribute, unique topological form and size.

Adjacent to the CBD is the Zone of Transition; this is a zone of residence for immigrants and low-income families and individuals. Consequently, it contains slums and poor inner-city houses. This zone suffers deterioration, poor infrastructure, sanitation and further invasion and eventual succession from the CBD by expanding business and manufacturing activities because of intensive demand for services and cheap labour.

The Zone of Workmen is a better residential zone than the transition zone. It primarily consists of second-generation immigrants who have had enough time to accumulate sufficient wealth to afford better housing. As the New Towns of that era, they relieved the second zone of the growth and pressure spilling over from the CBD. It is also characterized by residential land use with low class residential areas, but better than that of the transitional zone. This zone is further away from the nucleus and is thus subject to less pressure from the CBD. However, travel distances are longer, and residents must bear higher costs of transportation to the CBD. The Residential Zone consists of middle class housing for established city residents, many of whom moved outwards as the city grew and public transport developed. These people commute to work in the CBD.

The Commuter Zone is the outermost zone containing a broad community area. These suburban areas contain satellite cities and middle and upper-class residences along rail lines or rapid transit. The final zone, which is one of the early signs of sprawling development, is the farthest from the CBD in this model. It is characterized by high-class residential land use and high rent apartment buildings, with some districts offering single-family dwellings. This zone is far away from the CBD, involving longer travel times and increased costs; residents may require a car to ensure travel flexibility. These spatial arrangements are summarised in Table 3.3.

**Table 3.3: Summary of the Concentric Zone Model**

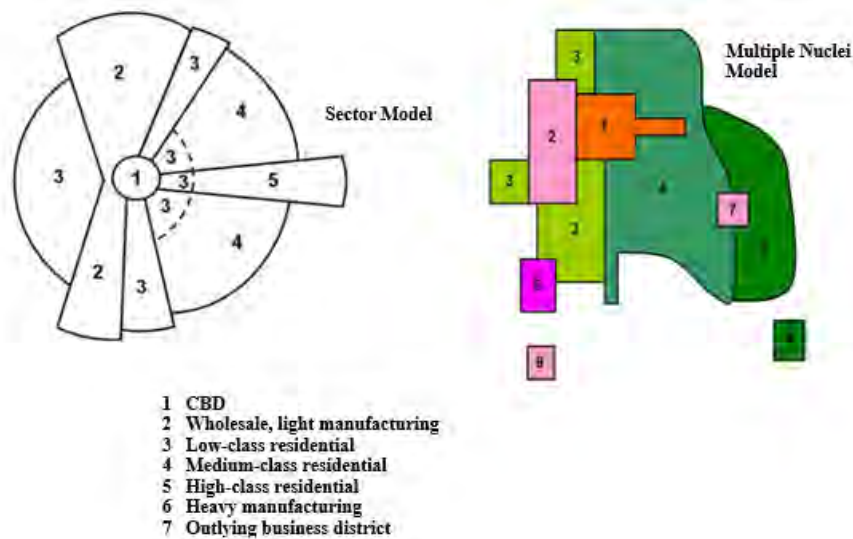
<b>I</b>	<b>CBD - Central Business District</b>	Employment and transport hub Markets and business centre a region of greatest mobility This area empties at night and fills in the morning Industrial activities
<b>II</b>	<b>Transition zone</b>	Deteriorated houses and slums; first generation immigrants This was the former suburbs of the old city and was taken over by businesses expanding from the CBD
<b>III</b>	<b>Zone of Workmen's Homes</b>	Second generation immigrants Homes of the working class Better housing conditions
<b>IV</b>	<b>Residential Zone</b>	Working class dominance Zone of better residences for the middle class Commute to work in the CBD
<b>V</b>	<b>Commuter Zone</b>	Longer commuting time Rural, suburbanized, setting Highest commuting costs Access to railway stations Good housing and low population density

Source: Author, 2018

Burgess' model was criticized for adopting a one-dimensional growth structure and hence lacking applicability to contemporary complex, multi-functional urban environments with different growth factors and origins. The model did not provide explanations for some of its postulations; it was silent on the size of the concentric zones and the dynamics that influence growth. It also did not mention if there were any form of regulations to control or restrict the outward spread of development at that time, no matter how crude or deficient. Rather than using the variables of urban growth and development, the model was built on observations of some American cities, which are not typical of most urban areas, and hence it cannot be generalized. While the model is useful in understanding urban land use patterns; its application to a metropolitan city is difficult as it is an agglomeration of several sub-cities and urban areas consisting of many CBDs and influenced by several growth dynamics, land use factors, policies and regulations which were not built into the model. Rodrigue, (2009) notes that the applicability and dynamics of land use models are related to issues such as the age, size and location settings of a city. The author adds that concentric cities are generally older and smaller, while polycentric cities are larger and better represents contemporary and emerging cities in recent times such as the Lagos mega city

### 3.3.2 The Sector & Multiple Nuclei City Models

The sector model by Hoyt is an extension of Burgess' concentric zone model, although it uses sectors in place of concentric circles. As illustrated in Fig. 3.5, land uses are represented in different parts of the city; the CBD remains in the centre and others spread out accordingly. Hoyt rejected the assumption that land use patterns occur in random concentric circles and noted that several factors are responsible for place development and the use of space. In line, he stated that land use is influenced by factors most beneficial for growth, profit and development. Rent, therefore have tendencies to determine the direction and pattern of development as high rent influence residential area growth, (Imimole, 2005). Hoyt analysed spatial arrangements with an emphasis on socio-economic class. The city expands outwards along sectors. The model reveals that high rent residential use is zoned to the best location away from the pollution and chaos of the city. Old and deteriorating inner city housing is inherited by the urban poor and low social classes through a filtering process. The model reveals that low class residential land use classification in sectors. Though development clustered as determined by rent was not rigid, there was no monopoly of zones by any social class as in the concentric model.



**Fig. 3.5:** Hoyt's Sector and Multiple Nuclei City Model

**Source:** [http://cronodon.com/PlanetTech/Earth\\_cities.html](http://cronodon.com/PlanetTech/Earth_cities.html)

Harris and Ullman introduced a more effective generalization of urban land uses (Luck & Wu, 2002). They argued that places do not grow around one CBD, but are formed by the integration of several separate nuclei. They become specialized and differentiated in the

growth process, but are bound by many factors, thus representing the fragmentation of urban areas, and specialized functions as well as suburbanization (Rodrigue, 2009). Specific separating factors such as high rents in the core, the natural attachment of certain activities and the advantages of separation of unlike activities contribute to the development of multiple nuclei. However, they concluded that the number of nuclei varies greatly from city to city; the larger the city the more numerous and specialised the nuclei (Steiss, 1974). Hence, the city comprises of several nuclei of varying range and hierarchies. The model in Figure 3.5 shows the various land uses distributed in no order around the CBD.

Ullman & Harris in Steiss, (1974) pg.99 identified the following four factors that are responsible for separate nuclei and differentiated districts:

- “The need for specialised facilities by certain activities” (e.g., accessibility requirements of retail districts, land requirements, and transportation needs of industrial activities).
- “Cohesive linkages among certain activities” (e.g. financial and office building districts).
- “Repelling forces among certain activities that would find proximity detrimental”.
- “Competition in the market place in terms of rental values”.

The multiple nuclei model is more contemporary and is informed by growing urbanization, increased demand and the price of land, among other factors. The emergence of these separate nuclei is a response to centripetal forces between activities; land use compatibility and the interdependence of certain types of activity; economies of scale, and the clustering of similar activities. Other factors include the centrifugal forces of incompatibility, conflicting, inharmonious land use, location suitability and affordability of optimal site rent (Carter 1995 in Imimole, 2005). These models are becoming increasingly inadequate to represent contemporary growing urban agglomerations due to the harmonization of the world through globalization which has substantially blurred land use dynamics (Rodrigue, 2009).

### **3.3.3 Bid Rent Theory**

Using a simple model and a case study of an agricultural setting, Von Thunen illustrated the relationships between cost of production and profitability which is influenced by cost of rent, transporting agricultural supplies to the central market and eventual markets price with the

assumption of a uniform transport system.

Urban rent is influenced by supply and demand; it is determined by productivity and profitability which are highest at the place of maximum accessibility, it is a major decision indicator for land use and economies of scale (Balchin & Kieve, 1985; Richardson, 2013). Von Thunen expressed the relationships between economic dynamics and urban spatial forms and translated the relationship between land rent and transport costs into concentric zones (Briassoulis, 2000; Richardson, 2013). The model postulates a monocentric city surrounded by residential suburbs, thereby explaining the pattern of residential land use formation around the CBD (Zhang, 2002).

The greater the distance from the market, the less the rent per unit of land and profitability hence there is high demands for central lands. The location of land determines demand, value and capacity (Imimole, 2005). Central areas are places for intensive commercial activity and population accumulation, thereby resulting in high competition for land (Rodrigue, 2009). In the same vein, the cost of land increases hierarchically towards the CBD. The proximity to the CBD implies more demand and higher rent value for which there is willingness to pay. Hence the most productive activities compete for the land closest to the market (Briassoulis, 2000). The rent theory postulates that affordability and ability to pay rent determine the use of land and the intensity of development. This explains the relationship between density and rent.

The key element is the bid rent, which represents the maximum rent each participant in the market can pay at each location. Because of the different possible uses of a location there is a set of bid rents for any given location; hence, the need for competitive bidding (ibid). This places more value on land close to the CBD; thus, land that is farther away is less desirable, and in greater supply, attracting less rent due to increasing transport costs. The implications include the tendency for a class of use to cluster in certain parts of an urban centre and the fact that investors are likely to over-use the land to maximize the profit on their investment (Briassoulis, 2000). Land speculation also increases as those that can afford to buy land rent out to tenants, thereby inhibiting diversity and mixed-use development (Briassoulis, 2000).

The situation described in this model reflects the current situation in Lagos metropolis as average- and low-income earners cannot compete for land in the city centre or in places that offer desirable facilities and amenities; hence increasing sprawling development on semi-rural and rural agricultural land, which is less expensive but has poor services. Victoria Island was established as a residential area, but today it is one of the busiest areas in Lagos with a

high level of business activities due to its access to the central district. Property conversions, especially from residential to commercial/office can be observed along the major streets of the area. This theory also explains why Lagos Island is characterized by higher rise vertical development; in their quest for maximum profit on investment, developers construct multi-level buildings that eventually yield good rentals.

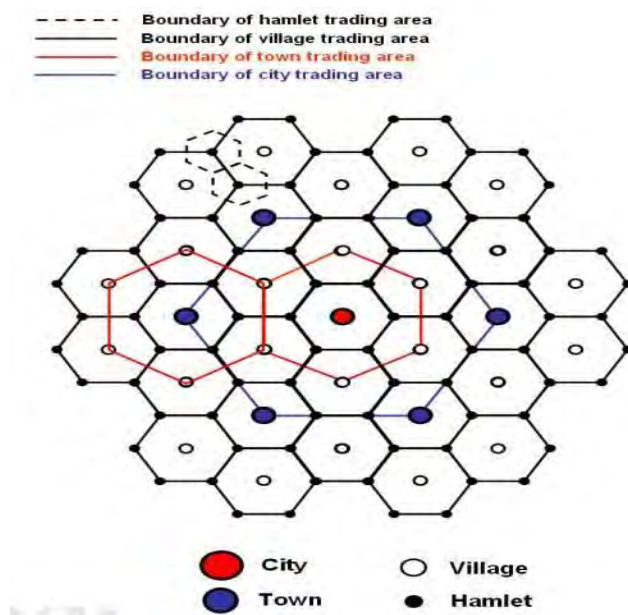
However, Doan & Oduro, (2012) maintain that the bid rent model's assumption that peri-urbanization occurs as a uniform process of concentric expansion is naïve; they conclude that sprawl developments at the edge of the urban area are a response to the adaptive failure of the modernist planning model. Adams, (1994) observed that the model assumes that land is readily supplied to meet the demands of the highest bidder; however, the supply of land may be restricted by planning, physical, valuation, or ownership constraints. The flaws of this model are that it is static and does not make explicit reference to mechanisms of land use change. It also assumes that the city is a uniformly fertile plain, with no spatial differentiation or any topographic or geologic impediments and that the only variable affecting land and presumably its changing use is the value of the associated product (Richardson, 2013; Rodrigue, 2009). These assumptions weaken its potency and applicability to reality and planning as no cities possess such characteristics. The relationship between agricultural land use and market distance is very difficult to establish in the contemporary context; hence, conventional representations of land rent that lean on the concentric paradigm are being challenged by the structural modification of contemporary cities.

### **3.3.4 The Central Place Theory**

The Central Place Theory evolved from Walter Christaller's studies of Southern Germany in 1933. He sought to establish the relationship between the size, number and physical distribution of cities. Fig. 3.6 illustrated the relationship of places based on their sphere of influence, it explained the spatial distribution of places using the central and market areas as attraction places. It classified settlements in hierarchies; with central places providing one or more services for their surrounding areas. These settlements vary in importance, which can be determined by the number and type of other settlements that depend on them and per the number and type of services or functions, they provide.

The theory has been criticized for relating only to the service sector and for assuming a uniform distribution of natural resources and population. Settlements may develop due to

other factors. As such, the Central Place Theory cannot provide a full explanation of the urban spatial structure.



**Fig. 3.6:** Central Place Theory

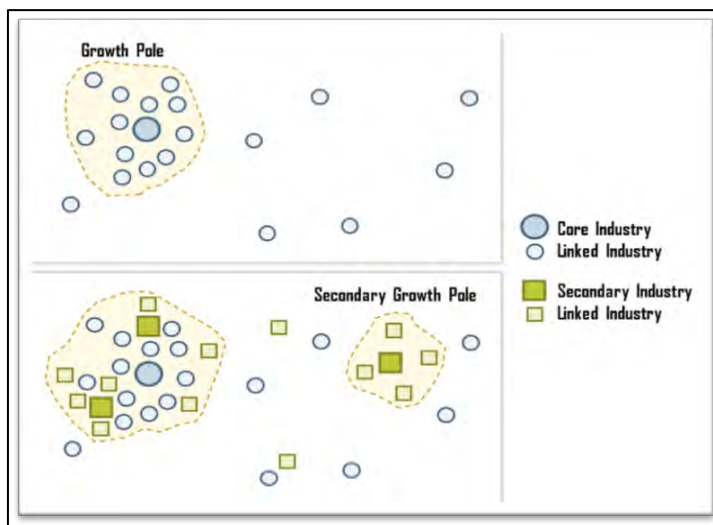
**Source:** [http://cronodon.com/PlanetTech/Earth\\_cities.html](http://cronodon.com/PlanetTech/Earth_cities.html)

It relates only to the service element of a regional structure and fails to explain distortions in the hierarchy caused by the location of primary and manufacturing industry, which tends to group into clusters or agglomerations due to resource location. The theory is essentially static, explaining the existence of a regional spatial structure but failing to explain how that structure has evolved and how it might change in the future. However, it plays a useful role in identifying important aspects of hierarchy of functions, influence and market range and threshold. The Lagos metropolitan city is a central place with high sphere of influence and provision of services not only within the state but on a regional scale.

### 3.3.5 The Growth Pole Theory

Every settlement has a primary source and attraction for development. The Lagos metropolis has many attraction poles, ranging from its massive ports to the market, industries and transport nodes etc., all with different scales of influence, profoundly impacting the city. These growth poles have influenced different land uses based on price and/or use value. Ports being hubs for logistics and movement of goods have been and will continue to be centres and poles of physical growth, (Hein, 2011).

This theory explains the dependence of smaller units on the strength of bigger units, especially in terms of the shared cost of operations and support services. Fig. 3.7 illustrates the hierarchical relationships using a core industry and others clustering around it. The core pole attracts others, alongside support services and infrastructure. This would be relevant if it were a farm, a river, or a beachfront influencing the use of land adjacent to it or near. Hence, urban development is incremental, based on the best fit and ranking of the proposed use of land in terms of the growth pole.



The model shows settlements in the order of their sphere of influence and growth attractions.

**Fig. 3.7:** Growth Pole Model

**Source:** <https://people.hofstra.edu/geotrans/eng/ch2en/conc2en/growthpoles.html>

Trends in contemporary urban formations not only influence but also determine the price, value, type and pace of development. Thunen explained that land close to growth poles is of the highest value even though in this case the pole was the CBD in relation to agricultural land use and produce. This theory can promote planning for smart growth by decentralizing poles of development, thereby leading to a balance between economic and urban development. If the poles are adequately spaced, the urban population can concentrate around the clusters that best suit them without necessarily travelling long distances.

This theory can be applied at different scales, hierarchies and levels depending on the type and size of pole (the growth attraction) which could be transport terminals, markets, industries as primary poles (Rodrigue et al., 2009; Richardson, 2013). The theory is realistic and makes no assumptions that can mislead urban policy formulation and development. It makes provision for growth and expansion through secondary growth poles; the onus thus



lies with the researcher or planning authority to identify growth poles and their level of influence and to rank them hierarchically to plan for adequate, effective and smart development. It is also possible for growth poles to have a ripple effect, and to decline in relevance in comparison to other poles due to technological developments and advancement, economic recession, a change in government or policy or due to the introduction of other poles, which may be entirely new, or the combination of two previously separate poles.

### **3.4 Theory of a good city Form; Principles and attributes**

Places are co-constructed by a wide range of factors (Parker and Doak, 2012). They comprise land uses, physical forms and socio-cultural aspects which come together to produce meaning. A range of disciplines has broadened knowledge of place, the conception that places have unique characteristics or a combination of factors that produce specialness; the *Genius loci* (Norberg-Schulz, 2006).

Evolving urban forms and associated challenges especially since the industrial revolution necessitated urban design; to adapt physical development to culture, politics and economies, etc. (Lloyd-Jones, 1998). The success of a place is determined by effective design, structured complexity and control mechanisms; defects can be prevented by good design and regulation (Banerjee and Southworth, 1990). This part discussed the concepts and principles of urban design as postulated by Lynch, (1960) and other scholars of spatial organization.

A city must possess certain attributes to be adjudged good. Lynch, (1982) proposes a general normative theory which relates the value of a city to its spatial characteristics, He suggests Meta criteria and performance dimensions<sup>4</sup> to measure goodness and settlement quality.

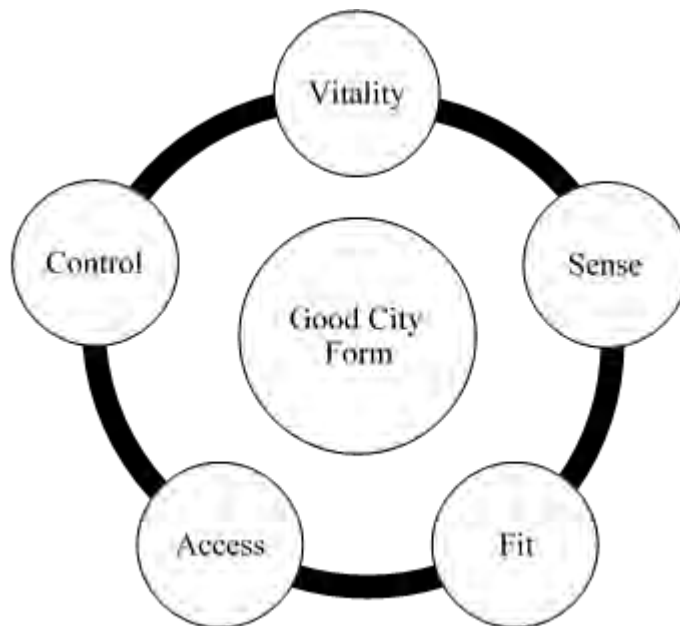
“A Good city form is vital (sustenant, safe, and consonant); it is sensible (identifiable, structured, congruent, transparent, legible, unfolding, and significant); it is well-fitted (a close match of form and behaviour which is stable and resilient); it is accessible (diverse, equitable, and locally manageable); and it is well controlled (congruent, certain, responsible, and intermittently loose”, (Lynch 1981, 235). It is one in which the complex ecology is maintained while allowing for progressive change. It enhances the continuity of a culture and the survival of its people, increases the sense of connection and permits individual growth.

Lynch’s criteria for a good city relate the value of a city to its spatial characteristics. A city can be adjudged “good” considering the durability, when the elements resist wear and decay. (Lynch, 1982). Lynch proposed attributes to determine city goodness from which

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<sup>4</sup>The theory comprises vitality, sense, fit, access, control, efficiency and justice.

Montgomery, (1998) adopted the principles of place making. A good city form incorporates the concepts of vitality, control, access, fit and sense etc. as illustrated in Fig.3.8.



**Fig. 3.8:** Sense of Place

**Source:** Author, 2018

### 3.5 Concepts and Principles of Urban Design

Vitality distinguishes successful urban areas; allows maximum scope for activity, real thought-provoking spatial forms; distinguished street life and access to places of meetings and social gathering amongst others, (Lynch, 1960; Montgomery, 1998). For Lynch, (1982), a vital city is one that successfully fulfils the needs of its inhabitants within a safe environment. In the long term, urban vitality can only be achieved where there is a complex diversity of primary land uses; sufficient levels of demand to sustain wide-ranging economic activity, supports pedestrian flow and movement and generally the extent to which a place feels alive and diverse.

Diversity is one of the key elements of urban quality, hence a factor to be considered in urban design. It bridges the gap of exclusive development and homogenous city function thereby enhancing activity and liveliness. It creates opportunities and possibilities for extended operations, activities and transactions by providing the required spaces that operate around the clock for social, cultural and economic transactions, (Montgomery, 1998). The urban place is a business centre and the key to successful urban places is a complex transaction base. Extended operating hours enhance vitality by keeping the city lively and awake for longer periods, in some cases 24 hours. Key components for diversity are proximity and a

large population. The demands and needs of a large, homogeneous urban population are proportional to its size; this implies that demand will be sufficient and varied enough to sustain economic activity.

Control is the management of development to align with the design principles and objective; a city with good control is arranged so that citizens have a say in the management of the spaces in which they work and reside. A city can be adjudged “good” by considering the durability performance characteristic with consideration for other non-spatial factors which may be city-specific.

A good city is one in which the complex ecology is maintained while allowing for progressive change. It enhances the continuity of a culture and the survival of its people, increases the sense of connection and permits individual growth. It is open, accessible, decentralized, diverse, adaptable and tolerant, (Lynch, 1982).

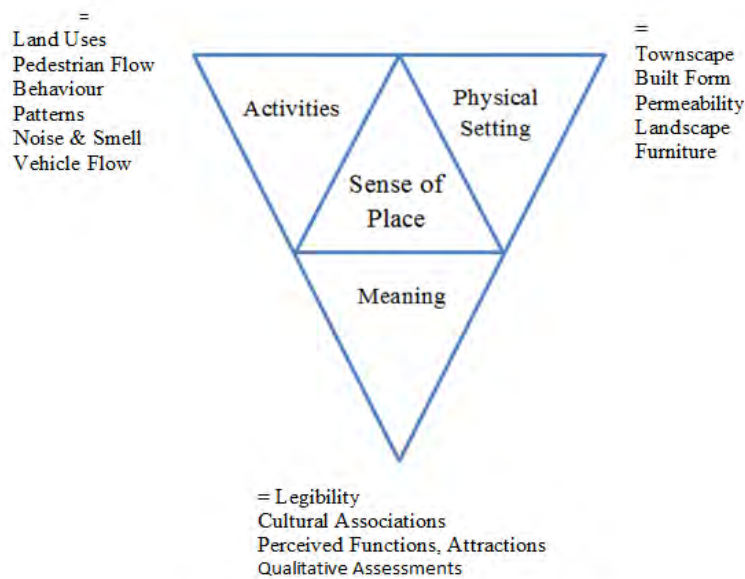
Fit as implied is the match between place function and its physical form. As stated by (Lynch, 1981: 151), it is “how well the spatial and temporal pattern of a settlement matches the customary behaviour of its inhabitants”

Accessibility is achieved when people of all ages and backgrounds can reach the activities, resources, services and information they require with ease.

A sense of place implies potential emotional attachment or reaction; designers aim to replicate or retain features of the built environment that are likely to provoke positive feelings or maintain certain continuities with the existing place identity. A sensible city recognises its forms and functions; it is organised, functional and serviceable. This inspired the new urbanism approaches that advocate for compact mixed-use developments, walk-able Neighbourhoods and integrated public spaces (Amin, 2008). Understanding the sense of place recognises that place making can be instrumental in community development and shaping some aspects of quality of life. Punter 1991 in Montgomery, (1998 pg.97), illustrates these components using activity and physical settlements; see Fig.3.9.

The city form is determined by its legibility; this is the degree to which the different elements of the city (paths, edges, districts, nodes and landmarks) are organized into a coherent and recognizable pattern. A legible city is one whose districts, landmarks or pathways is easily identifiable and is easily grouped into an overall pattern (Lynch, 1982). It determines the quality and identity that is easily recognizable by its users. In recent years, the traditional city form has given way to less legible landscapes of sprawling polycentric landforms, diminishing the prominence of the CBD. Lynch (1960) emphasized that factors that integrate

people and their environment should be considered. One of which is the visual quality, determined by legibility.



**Fig. 3.9:** Components of sense of place

**Source:** Punter 1991 in (Montgomery, 1998) pg.97

Permeability is the choice of movement the environment presents to users. Others include Imageability; it refers to the extent to which the components of the environment make a strong impression on the individual, (Lynch, 1960, 1981). The attributes of shape, colour or arrangement, which enables strong mental images of the environment; a highly imageable city would be seen to be well formed, distinct and remarkable. Such a city would be regarded over time as having a pattern of continuity, with many distinctive parts that are clearly interconnected (Lynch, 1960, 1982). Old cities had high levels of Imageability; buildings were symbolic of cultural, religious and administrative values and meanings. Civic places such as churches and squares were critical to place making.

### Scale and proportion

Scale and proportion refer to the relation of the parts to one another. The way components can be arranged in a coherent manner. Order and unity is achieved through proportion, giving due weight to the compositional elements. In architecture, proportion specifies the relation of the building parts to one another and to the building. Since the city is likened to the building, it can be used to outline the relation of the city parts and how they impact the city outlook.

Poor proportioning result to certain features and land use dominating the environment. The concept of scale is pertinent in planning for urban support services, urban design should consider the size and types of buildings, the mix of uses and land use intensity in relation to space and population. The scale of development can be assessed by means of land utilization and the mix of uses across the city.

### **Symmetry Balance and Rhythm**

Theorists in the field of urban design have emphasized the need for correspondence between external symmetry and internal functions. A well-balanced building has reasonable distribution of its component parts. This also relates to the city; a balanced city has adequate mix of uses and required carrying capacity. Balance in spatial distribution is relevant for urban morphological formations and visual aesthetics. This can be achieved by a subtle relationship between built-up, open areas and their supporting infrastructure, (Keeble, 1964.100).

### **Order**

The concept of order in urban design is universally accepted as an attribute of a good city. It is the primary goal of urban planning and fundamental to urban design. Urban design involves the correlation of different uses into a harmonious whole. It ensures balance; all parts of the whole correspond with one another, ensuring harmony and compatibility. The look of a city cannot be separated from its functions. Laurence, (2006) while reviewing urban theories notes that the look of things and the way they work are inextricably bound together, especially in cities. He states the futility of planning a city's appearance without being aware of its innate functioning. However, giving primacy to the look of things is looking for trouble and seeking only functional solutions is equally short sighted. The failure of some large-scale city projects may have resulted from neglect of this principle and the inability to link beauty, utility, and durability. Coherent city form emerges from planning approaches that reduce disorder (Salingaros, 2005).

### 3.6 Planning Theory

Taylor, (1998) observes that cities can be wonderful places, as indicated by the number of people who flock to Florence, Venice, Paris, Rome, London and New York. However, he notes that many cities are inhospitable, ugly places, resulting in anti-urbanism. Taylor (1998) adds that cities are human made and the fact that some are pleasant and uplifting shows that the miserable urban environments that most people are condemned to live in do not have to be this way. This is what makes town planning and the theory which underpins it so important (Taylor, 1998).

The philosophy of Planning is varied, idealistic, methodical, incremental and rational; all proffering explanations to the nature, types, approach of planning. They are all relevant and can hardly be exclusively adopted hence they are simultaneously or sequentially related and essential at different times of planning. It is certain that some theories are more generalist than others hence some will be more appropriate than others at some point and based on the objective and demands of the situation at hand.

Planning theory encompasses decision-making tools that move beyond the realm of city planning to embrace economics, politics and urban management. It emphasizes the complexity of public decisions about city development and impacts. It is procedural or substantive; effective urban planning for sustainable development requires a balance (Faludi, 1973).

The incremental theory also referred to as the muddling theory lacks approach and clearly thought through achievable methods towards reaching set out goals and objectives. Its approaches and outcomes are accidental, disjointed and non-conformity; an anti-thesis of rational planning; devoid of well thought out procedural approaches of solving problems. It is further criticised not to be a form of planning but rather an outcome of poor or no planning, most times the outcome is undesirable and lacks solution to the problem.

Rationalism is a decision support model; it makes provision for successful decision making incorporates approaches and outcomes from problem identification to proffering best suited solutions. Faludi, (1973) and Thomas, (1982) describe planning as a rational process of thought and action that ultimately aims to promote human growth.

The utopian tradition is imbedded in the objectives of urban planning; achieving the ideal, secure and functional environment. It set up goals for which methods and processes are to be built and put in place to achieve. This was the philosophy adopted by several notable planners and plans such as the Howards garden city, its pragmatic nature allows application in every

aspect for which goals can be put in place. Its approach is based on rationality; alternative courses of action are evaluated against the desired ends and the best course of action to provide solutions is identified.

### **3.7 Community Participation and Inclusive Planning**

Modern-day planning includes participatory principles (Plessis, 2014). It promotes democracy through a bottom-up approach (Lane and McDonald, 2005). However, in many contemporary African cities planning approaches remain elitist, top-down and expert-driven (Asomani-Boateng, 2011). This is represented as people's power to utilise resources and to create human institutions to coordinate their control.

Globally, planning provides more flexible legislative frameworks that enhances strategic and collaborative decision-making models, (Odendaal, 2012). Collaborative planning is an inclusive approach of urban planning; all stakeholders are involved in decision-making through established systems to ensure active involvement and good representation. This way, planners are aware of the public's needs and preferences, hence enabled to make decisions that are tailored towards needs and values.

With the aim of providing quality living for urban residents and businesses of the city, the process of design should include all that will be affected. Moughtin, (2003) notes that participation and power distribution in the city making and development process is one of the principles of sustainable development; he emphasises that urban design without community participation in the decision-making and in the actual process of development is bound to fail. The author adds that participation is maximized when there is a democratic form of government with high levels of participation in administration, decentralised decision-making and incremental form planning. The skewed representation of different socioeconomic and political hierarchies in the planning process implies that some, especially lower-income groups, lack informed choice.

Consultation often takes the form of uni-directional briefing sessions and is simply an avenue for politicians to inform the public of decisions already made (Fransworth, 2013). The strategic development of cities is based on broader stakeholder choices (Sarkis et al., 2008; Fransworth, 2013). Advocacy is a democratic bottom-up approach to planning that is influenced by the participatory paradigm (Lane and McDonald, 2005). It advocates for inclusive planning and development, defending the rights of everyone to the city. The

participatory planning paradigm emphasizes community involvement in urban planning at various levels (Van Assche, 2013).

Planning is a political activity, to achieve sustainable development; a balance of power needs to be struck between politicians, planners and the public (Rakodi, 1997; Fransworth, 2013). The challenge for planners is their ability to effectively communicate the issues at hand to a representative set of citizens rather than only meeting with self-selecting and single-issue groups that tend to dominate discussions (Duany et al., 2010).

The complex nature of urban areas means that no single theory is adequate, urban planners should therefore carefully select the approaches that fit the situation at hand. Devolving decision-making power and authority to local communities and other stakeholders is likely to result more productive use and preservation of land resources. Addressing these issues will require considerable will and commitment on the part of policy-makers and practitioners (AU et al., 2009). The approach adopted by the South African government and eThekweni Municipality in the construction of the Moses Mabhida Stadium in the inner city of Durban and the upgrading of the King Zwelithini sports hub in Umlazi, a township created by apartheid spatial planning for black migrant workers, is laudable. Participatory planning will gradually blur the lines of segregation planning. While the latter example was primary in response to South Africa's hosting of the FIFA World Cup, integrating the township with the main city has the potential to stimulate development of this socio-economically depressed area, giving residents a sense of belonging and reconnection (Adebayo, 2012). Planning theory should thus be pragmatic to addressing exclusion issues in urban settlements; enable equity and sustainability, (Næss, 2001).

Adebayo, (2000) opines that for community participation to achieve development objectives, it should involve other non- spatial aspects that have impacts on development such as social change, choice and democracy and a good knowledge of the community to know the appropriate approaches to community participation, and these largely depend on the objectives of the project.

### **3.8 Summary of chapter**

Spatial land use models explain the patterns of land use and location determinants, how cities grew and the reasons why urban areas grew or declined (Briassoulis, 2000). They interpret land use, urban forms and design and other substantive areas of urban development and management (Briassoulis, 2000). These theories throw light on the causes of spatial forms



and change based on different epistemologies; they describe change, why and what brings about them, (Briassoulis, 2000).

While the theoretic models discussed in this chapter share some similarities, the spatial configuration they propose differs significantly (Steiss, 1974). The models posit that cities have internal structures, a central place of activity, the CBD, a growth pole and place of high land value and demand. Both the concentric model and the sector model assume that there is a single urban core around which land use is arranged symmetrically in either concentric or sectoral patterns (Harris and Ullman, 1945; Steiss, 1974). Thunen assumed a uniform land layout and that the pattern of land use is determined by nearness to the CBD and cost.

These theories also note that cities have hierarchies of residential zones that may be determined by the CBD, social status, rent and transport time and cost. Inner city areas are high-density residential land uses close to the CBD.

The description of (CBD) shows they are central places, not necessarily in spatial terms but in relevance and influence. It is the hub of commerce and business and coincidentally central places of big cities in some cases. Morphology is influenced by origin and urban planning; in some scenarios, they are the growth poles where people clustered, and development commenced. In the case of the Lagos metropolis the Lagos Island is the origin of the city and the CBD. It has both indigenous cultural and economic attributes.

Studies and models of morphology explain this in the concentric and multiple nuclei models. The multiple nuclei model provides that the CBD may not necessarily be one and located in the centre; the rationale for primary and secondary CBDs as may be determined by their influence and prominence. Being inner cities, they are also places zoned for vertical and high rise commercial and residential land use. This implies that vertical development is prominent in the CBD. Poor planning for this part of the city results to urban decay and suburbanization as founded by urban theories. Urban residents move into the suburbs due to encroaching commercial activities and poor environmental conditions.

The city is not an in-organic element; it responds to growth and development stimuli and every city is different with unique attributes. Over-generalizations by models derived from American cities have limited applicability. Keeble, (1964) is of the view that topography, existing networks and buildings have already dictated a pattern rather than a circle as assumed by most theoretical town plans. Many urban theorists are guilty of this assumption in terms of their concentric and hierarchical postulations and silence on topography, existing developments and other factors. Keeble, (1964) adds that this is a call to arms for those

concerned with the built environment to shape and repair their cities following proven logic. There is thus a need to consider the complex systems and emerging placelessness into theory building. These includes factors of location and development decisions such as improved technology, ICT and the use of the Internet, improved transportation and even globalization that has reduced the urban space.

### **3.9 Conclusion**

This chapter defines the urban environment as settlements and places classified by size, function and forms. It outlines spatial elements and their organization towards promoting the understanding that places have component parts, an internal structure that determines their form guided by urban design, planning and management. The theoretical framework identified a gap in theorizing for urban forms, most theories are based on what already exist on ground and not a theory for city building. Land use models are a guide to policy and a strong and critical demand of contemporary times; if theories are inappropriately used or unrepresentative, this might lead to misguided policy and produce more ills than those that it aims to cure. Settlements have parts, which can be harmoniously laid out plans with aesthetic and orderly patterns that are suitable for human habitation, optimal production and circulation. Urban planning should coordinate these parts, planning from the very smallest to the biggest unit of the fabric to achieve functional and sustainable development. Chapter Four will review settlements evolution towards identifying the trends of development and the factors that influenced growth and change.

## CHAPTER FOUR

### URBAN SPACE DYNAMICS: THE EVOLUTION OF SPATIAL FORMS

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*“Early cities established on fertile lands, on fish-rich rivers, on lakes and oceans, on trade routes, near ore, coal, or oil deposits and on holy sites, but the origin of cities was not their destination. Trade and industry caused cities to transcend their original reason for being as they turned fossil fuels and resources into goods, money and power” (Girardet, 1992 pg.32)*

#### **4.0 Introduction**

Morphology is best understood from historical information; the process of development and the factors that informed development decisions. This chapter discusses the evolution and historical patterns of urbanization and development, as well as growth trends and causal factors. It also reviews the impact of changes in the political and administrative structure on urban management and development.

Landscape archaeology investigates spatial forms and the factors that influenced them and how humanity changed the physical appearance of the environment. It is a multidisciplinary approach that links spatial development to non-spatial factors of history, culture, and social stratum. Urban planning advanced with urbanization and growth from natural, informal forms to more picturesque forms guided by plans (Broadbent, 1990; Catanese, 1988). Through the ages, urban planning has been guided by themes and objectives that formed the context of the plan. These themes changed over time to address issues ranging from proximity to fertile land, water, security, urbanization, industrialization, and recently achieving sustainable compact mixed-use development.

#### **4.1 Theories of Urban Origin**

Several theories postulated the origin and evolution of urban places; Pacione, (2009) citing Wittfogel, (1957, Wheatley, (1971; Sjoberg, 1960; Sanders & Price 1968) explained urban origins using the Hydraulic, Economic, Military and Religious theories. Further citing Redman, (1978), Pacione emphasized that no one factor is responsible for urban development, therefore urban spaces evolved out of a combination of several causative factors interacting together over an extended period of time.

The hydraulic theory; with reference to Wittfogel, Pacione, (2009) explained the contribution of irrigation to agricultural development which is a primary growth and change trigger. The growth translated to demographic growth, urbanization and spatial modifications in the pre-industrial cities.

The Economic Theory is used to explain the contribution of trade to urban growth and development. Trade brought about economies of scale, interaction between people and places, growing opportunities of employments, service deliver etc all which are pull factors to urban development.

The Military theory emphasized the contribution of security of fortified settlements to growth and development. People preferred to live in safe places hence the tendency for concentration of large population which eventually diversified and specialized in different fields and trades, all having impacts on spatial formation. Religious theories explained the influence of worship places churches, cathedrals, temple, and shrines on the spatial space and administration brought about urban development.

These evolution and civilization was grouped into three main phases each involving innovations in agriculture, economics and trade, securing livelihoods and population growth, (Morris, 1995). Morris narrated that these phases spans from at least half a million years ago, until about 1000BC comprising the Palaeolithic and Neolithic ages leading into the bronze ages, (a period in which the first urban civilization was firmly established; starting between 3500 and 3000 BC and lasting for some 2000 years). These periods were followed by more modern times of growth and development especially since the Renaissance.

#### **4.2 Morphogenesis and Transformation**

Lynch, (1960) described the city as a piece of architecture; complex, malleable and continuously changing. Barredo and Demicheli, (2003) elaborates that the complexity of the urban system is enhanced in cities where many factors of change termed “trigger factors”, by Pacione, (2005) increase the unpredictability of the system. Lynch, (1960) added that, at different points in time, sequences are reversed, interrupted, abandoned, or cut across; hence the city is a builder’s product where structural modification and change in detail is constant. therefore, the form of the city as contrary to modernist dogma; not merely a neatly-ordered aerial plan but mainly outcomes from incremental developments in naturally informal settings (Broadbent, 1990; Salingaros, 2005). Cities are seats of government, and trading centres; outcome of growth, (Rakodi, 1997). Before they emerged, people lived in smaller

settlement units considered safe and close to food and water. Increased population leads to settlements growing into various forms and scales and thresholds for higher-level services, offering rich employment, education, and leisure opportunities, (Eisner, et al. 1993; Portnov & Schwartz, 2009). This creates nucleated settlements that grow beyond agrarian services to offer multiple specializations, manufacturing and services that define the physical forms of the environment. Cities emerged in Europe, the Middle East and south India as early as the second millennium BCE, if not earlier (Pounds, 2005).

Temporal growth was as defined by planning, growth, decline and regeneration. The cities of today are the hamlets of yesterday metamorphosed. Every generation has a phase of development to address their needs based on available resources and technology. This is evident in the evolution of the subsistence agrarian practices of early humans to the technologies of the industrial revolution and contemporary innovations. These factors influenced settlements' formation, growth, development, and formal urban planning. Table 4.1 outlines the changing forms in European town planning history with different planning innovation all responding to changes, and growth.

**Table 4.1: Innovation in Basic Urban Arrangements**

TIMEFRAME	INNOVATION	LOCATION
1100-1500	Medieval irregular towns	Middle Europe
1200-1400	Medieval regular towns	France, south west Germany, Baltic Sea, east of Elbe
1500-1700	Renaissance town concepts	Italy, France, Germany, USA
1600-1900	Baroque town concepts	Rome, Paris
1800-1830	Classical grid/block reverting to renaissance principles	Krefeld, Prussia
1800-1880	Geometric town design	Middle Europe
1850-1900	Hausmann: axis concept, circus, triangle boulevard points de vue	Paris
1857	Ring concept	Vienna, Cologne
1889-1930	Sitte, Henrici, Unwin; artistic movement	Austria, Germany, UK
1898-1903	Howards, Parker and Unwin; Garden city	Letchworth
1902-1970	Garden city movement	Worldwide
1900-1930	Modern blocks	Netherlands, Germany
1920-1930	Corbusier, Taut, May Gropius; rationalism and Neuse Bauen	France, Germany
1930-1945	Fascist neo-classicism	Italy, Germany
1945-1975	Flowing space and free	
1975-DATE	Re-urbanization; reverting to block systems	Europe
1975-DATE	Postmodernism	Worldwide
1985-DATE	De-constructivism	Western world

Source: (Curdes, 1993)

Studies of human activities reveal settlements evolution; the Civilization of prehistoric settlements and their progression to urbanization. Adams, (1966) identified civilization as an advantage to settlements advancement. Childe (1936, 1950) described the transformation of cities from their initial small knitted agrarian activity to larger urban forms and agglomerations; he identified increased population, growth, industrialization, trade amongst others as factors that influence settlement change and complexity. Pacione, (2005) also stated in agreement that the characteristics of urban places are outcome of the advancements of these factors. He stated the advancement of economics and businesses from local to international and global levels have impacts on urban spaces. This is further enhanced by technological advancement influencing transportation, architecture and engineering and the way cities are built. Political and social ideologies are reflected, on spatial forms, Pacione, (2005) cited the impacts of political ideologies on urban space, the socialist city promoted spatial equity, inclusive development and housing; Capitalism relaxed strict planning controls, condoned suburbanization and social differentiation thrived. Others include feudalism, capitalism and even more recently colonialism with disproportionate and sectoral spatial development.

#### **4.2.1 Traditional Urban Form**

Land is one of the basic and primary resources for human sustainability; this implies that the relationship between people and land has its origins in their appearance on earth (Briassoulis, 2000). Land is a crucial resource for development defined in many ways; it is a significant resource that meets a variety of human needs, ranging from economics to spirituality, (Daniel & Boshoff, 2003). Access, distribution and use of land are of vital importance, faulty distribution leads to function failure and unavoidable consequences (Hubaceka et al. 2005). While land is fixed, irreplaceable, and permanent, its value and development patterns change constantly due to accelerated urban growth and increased demand. The use of land is the outcome of decisions that vary over time; hence land use changes are in relationship with policy, governance, laws and regulations etc, (Jeremy & Josef, 2005).

The Stone Age/Palaeolithic Age had no form of planning; humans existed on much the same basis as other animals; until about 14000 BC the society was a mobile one (Morris, 1995). People moved from one crudely fashioned temporary shelter to another in search of food and water. Growth accelerated with the discovery of advanced food production, preservation, and storage techniques that led to increased output and bigger settlements in nucleated tribal or

ancestral clusters (Portnov & Schwartz, 2009).

The Neolithic Age witnessed more housing communities and sizeable settlements as agriculture transformed the economy, creating a favourable environment for growth. Subsistence activities evolved and rudimentary techniques for cultivation and the domestication of animals developed.

Early civilization formed around 12000BCE as People found ways to organize the environment in which they live, transforming the natural environment. Natural factors predominantly influenced development and growth, as consideration for vulnerabilities to hazards and disasters and the opportunities of rich fertile soils and more all influenced settlement decisions, (Eisner, et al. 1993).

Cities emerged in prehistoric times when groups of foragers settled for subsistence agriculture on the flood plains of the Tigris-Euphrates Rivers, the River Nile and Indus between 4000- 3000 BC, (Morris,1995). Villages transformed into cities as the population increased and permanent settlements evolved in places with resources and favourable growth factors, (Adinnu, 2005). The region grew, its structure changed, and its complexity increased the need for protection. Security considerations motivated the requirements that settlements be located on difficult terrain and or enclosed within high walls, hence they built in fortified places.

The Mesopotamian cities, Sumerian, Ur were notable cities during this period administered by priests and secular rulers under a communal system of land ownership; land was owned by the gods and overseen by priests and agents of the deity. Plots were subdivided from large tribal blocks and granted to individuals on a freehold or rental basis, (Morris, 1995).

By 2500BC Sumerian cities had grown in considerable size with population as high as 70,000 (Childe 1945 in burke), Ur having a population of about 34,000 had an area within its walls of 220 acres. The cities were defensively walled; the morphology comprised imposing religious shrines, the Ziggurat in the inner city and compact housing, usually consisting of two storeys along straight footways. Individual units made up of continuous narrow rooms surrounding an internal courtyard, a design informed by the need for privacy. Most buildings were made of sun dried mud bricks prone to collapse due to weathering. Hence the city was subjected to preservation and excavation of ruins causing recurrent changes of ground levels. Ur emerged a prominent city due to its abundant natural resources and proximity to Tigris and Euphrates, the cities comprised an old walled city, religious zones and the outer town. The north-west quarter of the city zoned for religious use except for harbour, contained significant open spaces reserved for priests and royal households. An outstanding structure

prominent in the landscape of Ur and other Mesopotamian cities was the Ziggurat; a massive building in which their temples of worship are built.

Other notable Mesopotamian cities are Babylon; the largest with population 200, 000, Eridu, Uruk and Kish, Nippur. These are hub of trade, arts, culture and religion. The Architecture in these cities were not resilient to survive the weather, hence the cities deteriorate easily; the reason why little of Babylon is found around the present-day Iraq and Baghdad.

The growth of the Nile towns was restricted by the desert and influenced by the dictatorship of the Pharaoh who favoured luxurious edifices. Monumental architecture, palaces, tombs, temples, and pyramids of outstanding size and precision dominated the city space. These developments changed whenever a new leader emerged; each Pharaoh built his own city. Unlike the Sumerian towns, the relics of the Nile civilization have endured because they built with stones cut from the Nile cliff as against the bricks used by the Sumerians. Demarcated into two sections, the western section comprised of poor, high-density housing for the workers separated by a long wall from the eastern section made up of civic buildings, temples, and spacious accommodation for officials and rulers. On the outskirts of the eastern section was a large tomb for the Pharaoh. In 2650 BC the Kahun settlement emerged; an interventionist approach to provide housing for those working on the pyramid. It covered an area of 20 acres and was home to 10,000 people with a density of 500 persons per acre.

The Indus towns flourished between 3250-2750 BC and bore signs of some town planning. They created order out of the land use activities amongst the Bronze Age cities. While the economy was largely agrarian, the towns had a well-organised system of intercity trading and fewer temples and monuments. Notable towns include the Mohenjo-Daro and Harappa, both of which recorded as having a population as high as 40,000. These towns were refined, providing public utilities, functional and complete drainage systems not matched by other ancient civilizations. The street pattern was essentially gridiron pattern classified into hierarchies with buildings that would qualify as contemporary warehouses. The drainage channels were elaborately developed and patterned according to street type, with provision for a detachable cover enabling clearance when necessary. The design of the houses of this period was smarter; the alignment, setbacks, housing types and shapes of roofs were subject to development controls (Krier, 1976).

The Greek and Roman civilizations evolved between 444 and 146BC. Greek cities were smaller and more compact as expansion was restricted by topography. The classical cities



were carefully planned with regular street patterns intersecting at right angles; the centre was dominated by buildings devoted to worship, governance and business, providing generous space for temples, basilicas (large halls), and the amphitheatre (Colosseum) for public meeting and staged games (Pounds, 2005). With prominence for enormous public spaces, housing was rarely a determinant of the form (Catanese, 1988).

The Hippodamian gridiron plan was used to plan the Greek cities, Piraeus, Priene, and Miletus. Piraeus embraced three important features of modern urban design, circulation, a civic centre and the CBD. The plans were for a specified population of 10,000 households on a threefold land use system; religion, defence, and public and private uses (Palen, 1987:35 in Adinnu, 2005). These plans provided for order and functionality as well as pedestrians and specialised markets; attributes which earned Hippodamus the title of the predecessor of town planning.

The city of Priene incorporated the mixed-use concept and made provision for inner city residential land use, the CBD, Agora, Bouleuterion and places of entertainment while the city's acropolis is high on the hillside. The cities were walled for defence, had a pedestrianized town square or market place (Agora) located in the city centre. Kings' palaces gave way for temples dedicated to gods and goddesses. Elements of development control regulated buildings heights and enforced prohibition of development from encroaching on streets.

The Roman cities' expansion was not restricted science and engineering enabled elaborate architecture (Arche and Vault) and development. Outstanding features of Roman towns include the Temples, the Forum, the Thermae, public health and housing. The Temples were built on sites with advantaged views of the town, while the Forum was the equivalent of the Agora in the central built up area; comprised an open space and walkways.

There were as many forums as there were emperors. The Thermae was next to the Forum, a mixed-use development that comprised of recreation and dining areas, space set aside for concerts and theatres built by either the municipal authority or rich individuals for business purposes. Housing was exquisitely built using stone and marble and was largely of the one storey typology, while the roads were paved or layered by broken stones that facilitated the movement of wheeled vehicles.

The fall of the Roman Empire was a decline in urban civilization. Town planning regressed, the development and sophistication of town development gave way and towns basically reverted to the rural status. Leading to a breakdown of ordered existence, trade and security, Roman towns were abandoned, and helpless citizens fled to the rural country side for refuge.

Resumption to community life was inspired by Christianity and the dawn of Feudalism in the first millennium.

The middle-ages spanned though several centuries, (500AD-1500AD) in Europe after the fall of the Roman Empire and lasted up till the Renaissance. Medieval towns occurred as planned or organic and include one or more landmarks; the market square, cathedrals and monasteries.

The first phase of medieval development was organic showed little evidence of planning, they developed in very poor environmental conditions and lacking basic amenities. They were circular, naturally occurring irregular towns growing in unplanned and muddled forms with dispersed buildings. The streets were not built to any patterns or systems; narrow, inconsistent width or building line hence discontinuous and poorly networked. The towns had poor environmental quality; consequent poor sewerage and refuse collection and disposal. This contributed to poor health and sporadic diseases and smell. The building materials dominantly wood was susceptible to fire hazards. There was poor planning and zoning of incompatible uses. Poor infrastructure provision was evident; no paved paths, drainage networks and water were mostly drawn from wells.

They had enough spaces and gardens. Average densities for small towns was rarely more than five houses per net acre including the garden plot for each house, access streets, foot paths and associated open spaces; the inner cities had higher densities of 15-20 houses.

The revival of trade transformed the economy; spatial forms emerged around castles and monasteries. This led to the development of new towns (commonly referred to as Bastides) all over Europe. King Edward 1 established several Bastides in Europe as tools for consolidation of power and conquest. The plans influenced by the grid and rectilinear patterns of development, were built by permanent materials and mostly single storey. There were regulations for control of development, defaulters were levied penalties and, in some cases, forfeit the lands.

The castles strategically sited on hilltops are of enormous size and fortified with thick walls. It was also the centre, unit of economic and social life. Thoroughfares led directly to the church and castle from the outer gates. The road network connected individual property and are classified as primary and secondary for wheeled traffic and pedestrian circulation. Open spaces were left for domestication of animals and garden cultivation. Houses were built with stones for the castles and churches and masonry while wood was used for individual property. Street names changed from block to block, and according to the trade or family

occupying the frontage. There was evidence of external economies as similar tradesmen were near one another. The fine grain promoted easy accessibility, good social contact and visual richness (Banerjee & Southworth, 1990).

The towns adjusted naturally to topography and were roughly circular or rectangular in outline with a sharp boundary commonly marked by a wall for protection. These defensive walls were built around towns of importance due to invasions during the third century, (Pounds, 2005).

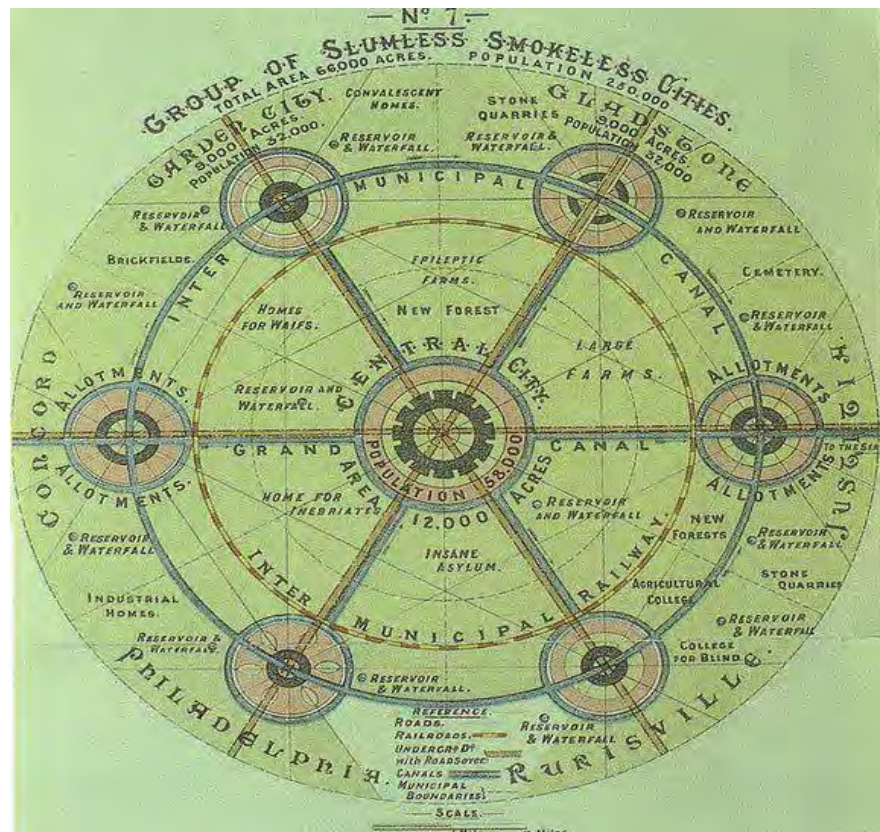
The discovery of gun powder in the fifteenth century impacted on the urban landscape; the walled cities were restructured, and outer walls were constructed to create defensive buffer zones, walls were demolished to accommodate growth since there was diminished effect of walls to providing security (Catanese, 1988). Few new towns were built during the Renaissance using the regular grid, which provided order. Elaborate fortification systems were built at major sides of the town; the construction of walls around dwellings clustered about the castles and monastery.

Aside from security concerns, Renaissance planning focused on aesthetics. Inspiration for Architecture was adapted from the Roman and Greek civilizations with prominence for domes and arches. Several urban planning concepts emerged during this period (Catanese, 1988). The foremost was the axis style of city design involving the use of squares and piazzas. This era left a lasting impression that cities can be beautiful and inspiring, a notion that the industrial revolution temporarily set aside. Urban renewal and revitalization opened the cramped areas of walled cities. It was during this period that the concept of urban design was established, involving not only planning for functionality but for beauty and form. However, the plans emphasized monumental designs for open spaces, boulevards and dwellings, neglecting the poor. Planning was thus elitist and socially insensitive.

#### **4.2.2 Modern urban forms**

Modernism was a response to industrialization and is associated with new towns development, and large-scale renewal projects. Industrialization led to the rapid growth of cities; the resultant problems called for reforms and interventions. Ebenezer Howard's notion of the garden city was philanthropist and reformist, his main objective being to solve the prevailing problems of urban congestion and poor living conditions in industrial cities at the end of the nineteenth century, especially among low-income groups (Keeble, 1964; Catanese,

1988). The Garden Cities movement, spearheaded by Howard aim to spread cities across the countryside and provide decent housing as shown in Figure 4.1. Having contrasted the advantages and disadvantages of the town and country, he resolved to create self-sufficient new towns to cluster around a parent or host town, making provision for nature, gardens, and larger floor space and interestingly, mixed-use development. These towns were planned to size and combined the advantages of town and country while avoiding the disadvantages of both (Keeble, 1983).



**Fig. 4.1:** Garden City model  
**Source:** Trancik, 1986

Effective development control was put in place to check real estate speculation (Altenmüller & Mindrup, 2009). The idea was to house a maximum of 30,000 in a city, with each family having its own house built on a plot of 20ft by 130ft. A thousand acres together with a peripheral belt of 5000 acres were set aside to be owned by the town so that the citizens could enjoy the use value due to development. This approach would continue until the great or parent city was totally ringed by satellite garden cities.

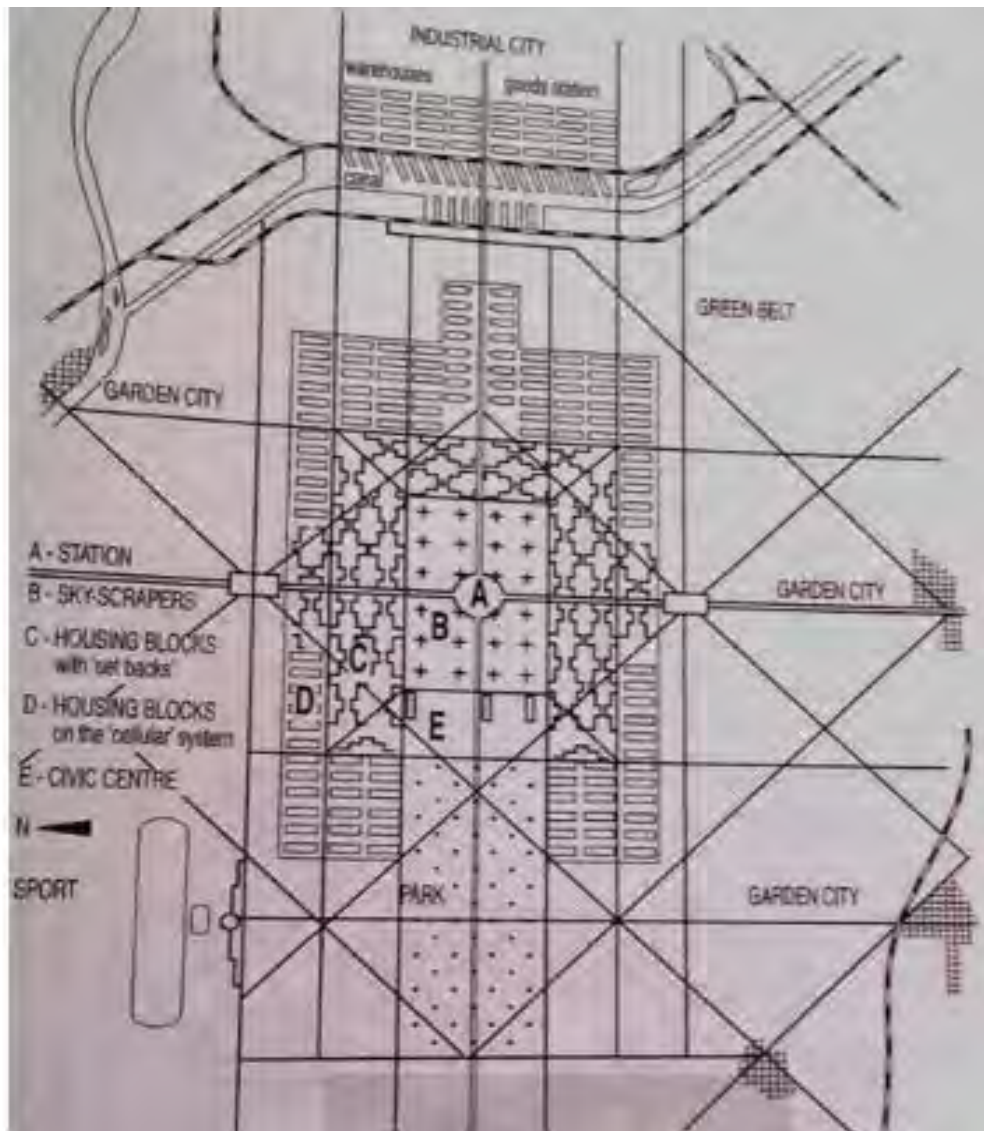
The Garden City movement was instrumental in the conceptualization of the new town as an urban planning movement (Catanese, 1988; Salingeros, 2005). The British government adopted this approach to build new towns and control growth. In the 1920s and 1930s, many

garden cities were built in England, France and North America; the most notable being Letchworth in England.

The concept was criticised by different authors for causing urban sprawl and poor land utilization. Lloyd-Jones, (1998) described it as decentralised, semi-autonomous community-based neighbourhoods that destroyed the traditional dense fabric of cities. Bigon, (2013) perceives that the concept was grossly misinterpreted giving rise to the unforeseen impact of urban sprawl and used as a tool for sectoral development by the colonial authorities. He notes that Howard never specified the single-family type in the design; rather it contained self-sufficient communities with substantially larger green spaces than was previously the case. Implementation of the garden city was essentially anti-social, contributing to residential segregation, in contrast to the objectives of the original concept outlined by Howard.

Le Corbusier promoted two methods to promote smart growth and land utilization divergent from the garden concept. The 'City of Tomorrow' was designed for three million inhabitants; and half of that population for La Ville Radieuse with the capacity to expand and create unique suburban, dense vertical development (Keeble, 1964). He favoured sectional densification with the core having the vertical development and land utilization and revitalization of inner city with no consideration for ribbon or sprawling development. Le Corbusier planned compact vertical development and open spaces. However, he did not acknowledge the need to promote small scales in a living city, (Salingaros, 2005).

The plan, provided for supporting infrastructure, especially in terms of a web that connects developments; the city plan provided for various hierarchies of roads and subways for urban service delivery, the free flow of traffic and modal interchange. The central part of the town consisted of high-rise buildings devoted to business and entertainment uses. Adjoining the central area was the high density residential district and isolated detached dormitory suburbs were situated on the outskirts; Le Corbusier termed these garden cities. This description suggests a typical city form informed by the concentric and growth pole theories and Von Thunen's theories in harmony with Howard's garden cities. Fig. 4.2 show the land use plan of a typical modern city.



**Fig. 4.2:** The City of Tomorrow

**Source:** (Keeble, 1964)

The globalization and new ways of doing business resulted to doing business without boundaries; locally, trans-national and international. This has necessitated the building of more airports and the extension of existing ones to accommodate higher capacities of trade and volume. The airports terminals therefore are places of immense commercial potential, (Margot, 2009). Margot describes them as centres for affluence with cumulative patronage outweighing that of shopping malls each year, hence place of high value. The role of Airports as transport nodes is further extended; they are no more transit stations with passengers' scaled oriented services.

The Aerotropolis is a recent urban form that translates the needs of transportation in spatial forms. Cities are built to serve the demands of airports around which they are built; providing

a business environment connecting people, housing while serving as a transport node. The influence of these cities transcends their geographical location and hence competes globally for relevance, opportunities and growth.

This concept illustrated in Figures 4.3 and 4.4 identifies the airport as a central place attracting aviation-oriented businesses and mixed use commercial development clustering around them and outward along connecting transport corridors. Prominent in Europe, Asia and the Middle East, the concept is motivated by the huge traffic and the opportunities of business.

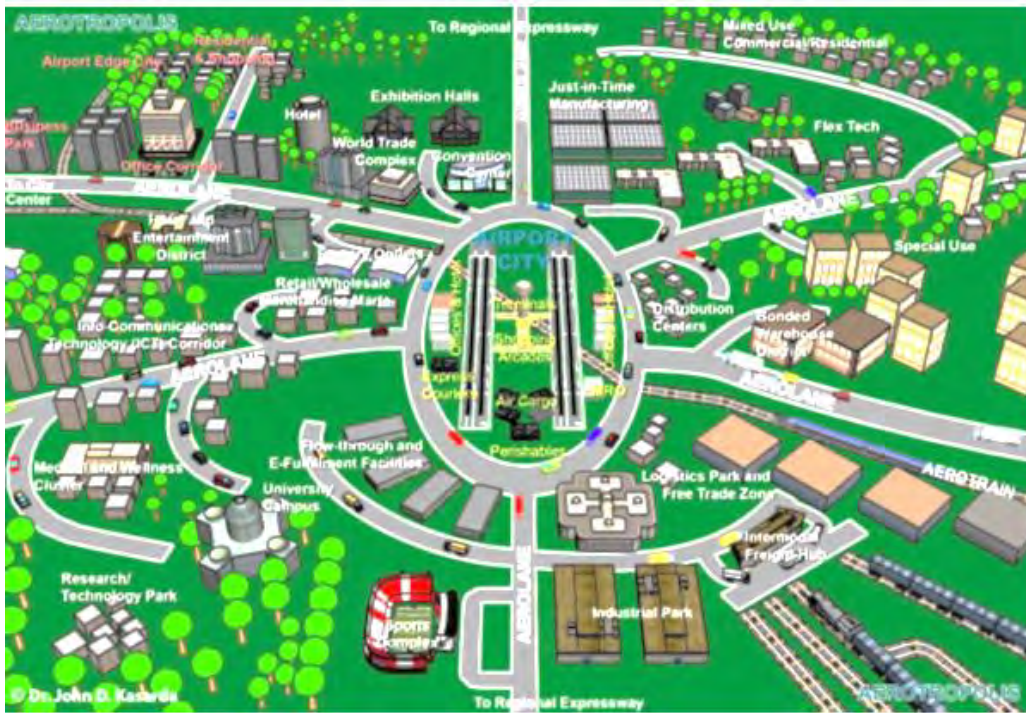
The Aerotropolis is an “urban complex whose layout, infrastructure and economy are centred on an airport, (Kasarda, 2011). Analogous in shape to the traditional metropolis made up of a central city and its rings of commuter-heavy suburbs, the Aerotropolis consists of an airport city core and outlying corridors and clusters of aviation-linked businesses and associated residential developments”, (Kasarda, 2011) pg12. The model offers an antidote to spontaneous, haphazard airport area development and its negative consequences towards achieving economically efficient, attractive, and sustainable airport regions.

The Aerotropolis model is more of a qualitative model replaced space and distance with time and cost of connectivity. It aims to achieve connecting people and businesses within the shortest time possible while increasing operational efficiency, offering not only economies of scale but of speed in the present times where time transcends cost to being currency.

He outlines the attributes of the city to include

- Location of airport-based businesses to the airport to improve their logistics
- Specialised codes for airport designs
- Mixed-use residential communities with consideration for convenience, nearness and a sense of community along with basic institutional and consumer services





**Fig. 4.3:** Compressed Aerotropolis Schematic with Airport City Core  
**Source:** Kasarda, J. (2011).



**Fig. 4.4:** New urban form placing airports in the centre with cities growing around them (Kasarda)  
**Source:** Kasarda, J. (2011).



The model is criticized on several issues; lacking character, urban ambience and sense of place, and inducing sprawl. Other aspects include the impacts of the high pollution generated by the machineries that run the city. Also, the concern for diminishing importance with advancing technology; new innovations of fast travels may replace air travels and other technologies that enhance e-business will require less physical presence for meetings and business and even leisure, hence may lead to these cities being obsolete soon. Kasarda, (2016) expressed the complexity of the task and the difficulty of achieving synergy amongst all stakeholders stating that that optimal outcomes are unlikely to occur under fragmented planning approaches and conflicting stakeholder interests. He however is optimistic that achieving good places are entirely outcomes of good planning, hence of the opinion that effective integrated planning and design of mixed use development can be in position to address these concerns.

#### **4.3 Factors of Forms Evolution**

Urban change according to Pacione, (2009) is influenced by several trigger factors, these factors go through processes to generate outcomes in the urban systems at different scales; Local, Regional, National and Global. These outcomes incorporate urbanisms and changes in spatial structure and the general use of land. Sustainability of development is determined by the approaches with which the triggers are managed. The urban change process is discussed elaborately by (Pacione, 2009. pg.4).

History shows that settlements did not simply grow but they were influenced by certain factors or circumstances, as shown in the early cities founded along rivers and fertile lands for cultivation and food production. Historical accounts reveal that cities were organic, based on the disputed belief that agriculture was a prerequisite for the evolution of urban settlements. Morris, (1995) describes organic cities evolved without any thought-out concept. It is argued that other factors could have contributed to settlements' growth as the first cities supposedly emerged more or less a millennium after the agricultural revolution (Lynch, 1982; Morris, 1995). Other factors contributed significantly to the texture of the environment or even changed the physical silhouette of the city against the backdrop of the agricultural revolution such as wars, the industrial revolution, urban regeneration and even the hosting of mega events such as the Olympics. These apart from transforming the physical environment, also contribute to socio-economic development by leaving a legacy of transformation through architecture and urban design (Adebayo, 2012). Morris, (1995) maintains that settlements have also been influenced by natural factors such as topography, climate and available

construction materials, which determined their forms. In other words, the physical or geographical attributes of a location can determine its growth pattern. The flood plain of the Tigris and the Euphrates provided rich fertile soil for agriculture, the river for irrigation transport waterways, and a source of building materials, etc.

In this way, the rivers were a form of natural wealth, which enabled the transformation of settlements. Growth is restricted due to physical settings. Unlike some African cities, the growth of Lagos metropolis is not multidirectional from its historic centres; its growth is unidirectional towards the north where most drained lands are found. Concentration of development in this area is responsible for the congestion in the metropolis. Other determinants are due to human intervention such as the fortification and gridiron subdivision prominent in organic cities and planned cities, respectively. Each has played a part in shaping urban forms, both organic and planned.

The urban form is the product of a social/cultural process at different levels (Kropf, 2005). Development decisions are informed by social interaction, communication, economic, market factors, and even cultural and family ties. Chapin, (1964) reviewed six theories of spatial structures put forward by Chapin et al. (1962); Guttenberg (1960); Lynch and Rodwin (1958); Meier (1962); Webber (1963) and Wingo, (1961). He concluded that changing forms of communication, improved transportation and communications technology have influenced development patterns. Increased resources, technologies, new ways of doing business, migration and shifts in politics and culture stimulate change individually and/or collectively, altering the urban form. Globalization has also contributed to uneven development, resulting in spatial disharmony as reflected in some developed and capitalist countries (McCarthy, 2007). The developments associated with increasing urbanization have had impacts that resonate at local, regional, and even national scale (Roger et al. 2006).

#### **4.4 Land use and Factors that influence development and forms**

Urban land use is defined by its function and the nature and concentration of activities, Formal land use representations are concerned with descriptive attributes of form both representations are related and important to urban planning (Rodrigue, 2009). Functional land uses are classified as primary and secondary uses. Primary uses are growth poles that can generate or attract other secondary uses. They include residential land use which stimulates demand for service, (Hoppenbrouwer & Louw, 2005).

The physical environment is evolving due to continuous human activities and development

(Briassoulis, 2008). Over the years, important changes have occurred in every conceivable domain and are challenging future cities (Salingaros, 2005). The extent of urbanization and world population growth drives changes in land use patterns; the intensity of these changes and their consequences warrant in-depth studies and research (Guan et al. 2011; Jat et al. 2007; Shu-Li Huanga et al. 2009). The global urban population is expected to grow by two billion before the end of 2040 with cities in developing countries absorbing 95% of this increase (Cities-Alliance, 2007). Previous research and observations reveal that several factors, ranging from social, to economic and political are the drivers of these developments and redevelopments, which manifest in changes in land use and the urban form. While some of these factors are city-specific, they are not independently predetermined, and some cannot be measured on specific scales, (Cities-Alliance, 2007; Lynch, 1982). It is sometimes difficult or almost impossible to analyse or establish exact relationships between them and how they cumulatively affect the use of land, which eventually results urban forms. Thus, it would be impracticable to rely on fixed or pre-determined land use models or exclusive rationality in formulating land use plans and decisions. Planners need to conduct research on achievable, practical and scientific methodologies, approaches and practices. While noting that the process is uneven, and volatile given the factors that influence the outcome; Adams, (1994) concluded that whether these changes are taking place slowly and are almost unnoticeable, or are rapid and disruptive, the production process is creating a finished product he christened “The Built Environment”. The study of sustainability remains generalized with limited consideration to the built environment. Sarkis et al. (2008) observed that this as a major breach that may jeopardise the objectives of continuity.

#### **4.4.1 Transportation, urban web principles and land use development**

The transportation network or web is one of the major determinants of urban spatial organization, existing primarily between buildings (Gehl, 1987 cited in Salingaros, 2005). The web consists of all external linkage systems of various hierarchies and types to include motorised and non-motorised transport routes and network. It should be planned to ensure maximum circulation; the urban network provides the foundation for a healthy urban fabric. Different paths and connections determine whether a city is living or otherwise (ibid). It is the vent through which cities and urban environments breathe; an ineffective urban web will eventually choke the city with chaos and loss of time and resources, (Salingaros, 2005). A sustainable web should be integrated towards providing specialised alternatives for varied

urban land uses and activities. Growth explosion and long motorised distance are fuelled by mobility resulting to disorderly spatial organizations, conflicting urban functions (residential, industrial, commercial) and specialized cities edge within metropolitan areas (Rodrigue, 2009). The network determines the subdivision of land for buildings and other development.

#### **4.4.2 Land value/market and urban housing**

Land value is one of the major determinants of the morphology of cities (Olayiwola et al. 2006). While the concepts of price and value both relate to land, the former refers to the amount for which the land is sold while the latter comprises use value (Morris, 1995). Morris adds that market prices are determined by demand and supply. The amount of land that buyers wish to purchase at a price based on the profitability of the proposed use and the quantity that vendors want to sell is fixed because, although it is recyclable, land is not a renewable resource; it is scarce and expensive to process especially in extreme cases of reclamation.

The land use pattern is determined by competition and the dynamics within market sectors. It is based on the use or proposed development such as agricultural, residential, retail, office, industrial, etc. This is reflected in Thunen's land use model where land users bid against one another, paying higher rent in return for proximity to the business centre, which reduces transport costs. Hence, rent and use are a function of distance from the centre of economic activity, (Briassoulis, 2000). One of the ways in which developers enhance the value of land or property is by changing its use; this implies that rapidly changing land use patterns are primarily profit driven, (Morris, 1995).

Housing provision is in two ways, the conventional and the non-conventional; the conventional being provided by formal institutions within the stipulation and provision of the laws and regulations while the non-conventional in contravention of existing regulations. Housing provision range from public, private, squatters and slums; the public housing provided by government has not been successful across third world countries, Africa, Nigeria and especially Lagos city. This deficiency result to alternate approaches to housing. Private housing is prevalent in urban sectors and mostly hybrid and non-conventional housing as the low income cannot afford the decent housing provided by private investors, which are profit inclined. It is on record that 70-95% of new housing in third world are illegal and accommodating 75% of the population. Responsible for this trend are restrained access to land and credit, security of tenure, infrastructure and land availability.

### 4.4.3 Population growth and Urbanization

Urban centres; home to more than half of the global population are destination of the future population., bringing together innovators, entrepreneurs and academics in a quest for employment and improved life (Cities-Alliance, 2007). The environment is required to provide for needs of the ever-increasing population and adapts to the footprint thereafter. Urban areas should maintain an internal equilibrium in such a way that their systems evolve in harmony, controlling the impact on the environment (Barredo & Demicheli, 2003); this calls for increased research and the formulation of all-encompassing policies beyond the traditions that inform Modernist urban planning (Odendaal, 2012). Urban and municipal authorities thus need to devote more time and effort to manage the use of land and other resources to accommodate the expanding population and urban land uses (Jat et al. 2007).

Urbanization is an instrument of growth and change, since the world's first cities established between 4500 and 3500 BC in the valleys of the Tigris-Euphrates, the Nile and the Indus, life and the urban form has never been static (Banerjee & Southworth, 1990). This process is a social phenomenon that transforms physical landscapes, (Cities-Alliance, 2007; Shu-Li Huang et al. 2009). Urbanization, rural-urban migration, rapid population growth and globalization, especially in developing countries, have led to suburbanization as such growth cannot be accommodated in the inner cities (Mace, 2013).

Urbanization has increased to the extent that the earth is becoming an urban world (Ahmadi & Toghyani, 2011). Half of the world's population already lives in cities (Wuppertal Institute for Climate Environment Energy, 2009: 279). In Africa, many city governments have been overwhelmed by this phenomenon and are unable to respond to the challenges that accompany it (Odendaal, 2012). Sparse low-density development for high population growth rate places results to slums and congestion.

The consequences of this urbanization assume complicated scales (Brenner, 2009; Brenner et al. 2009). Urbanization has resulted in dramatic landform transformation in that it has profoundly transformed natural landscapes throughout the world. This inevitably impacts the structure, of the ecological systems as urban forms have impact beyond their spatial boundaries, (Luck & Wu, 2002).

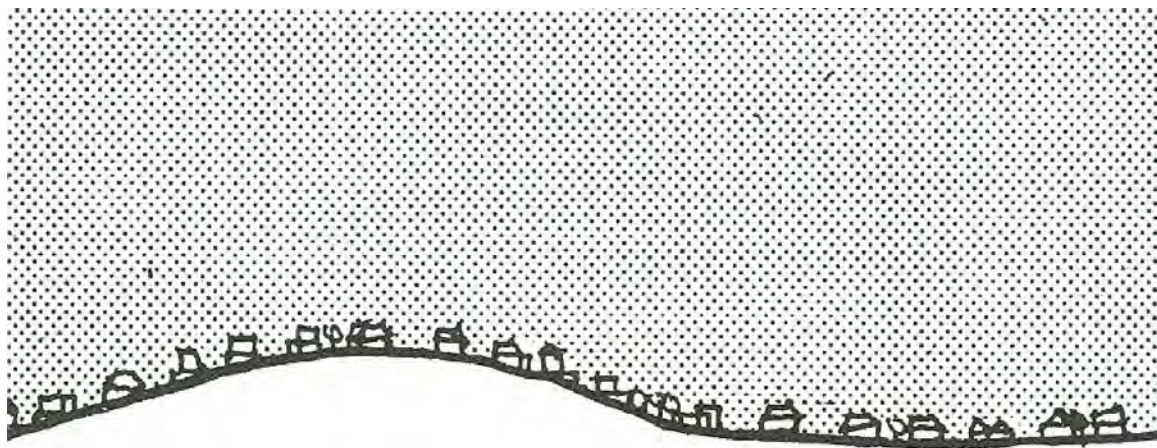
#### **4.4.4 Rural-urban migration signatures on the urban space**

High migration rates make it difficult to control cities' spatial expansion (Soja, 2010; Vermeiren et al. 2012). Though there are natural causes of growth, majority of urban growth in Africa is consequent Rural-urban migration due to fragile rural livelihoods in areas that lack facilities and infrastructure (Ananya Roy et al. 2008). Udo, (1970) noted that post-independence economic policy in Nigeria favoured urban industrial development at the expense of rural agricultural growth; hence the mass movement of the rural population to urban spaces during the late 1960s. This rapid influx impacts on the spatial systems and quality of life of urban dwellers (Soja, 2010; Vermeiren et al. 2012). Urbanization is prominent in developing countries; urban growth results in high demand for a fixed supply of land, leading to increased rents and competition for land.

The Lagos metropolitan area exhibits the two characteristics identified by the World Bank (2000,479) to describe rapid urban growth; with rural-urban migration outstripping natural population growth and the annexation of peri-urban and rural areas adjoining urban areas. The rate of influx of people into major cities is higher than the pace of settlement development, (Olokesusi, 2011), resulting in informal housing provision that does not comply with physical planning regulations and development control standards. Thus, there have been cases of incompatible land use activities and a shift from the initial traditional mono-centric urban form with declining densities and increased car dependency, and the city tending towards dispersion (Filion et al. 1999). Adetokunbo, (2010) notes that urbanization patterns in post-independence period have resulted into changes and deterioration of the environment. According to Larkham, (2005), some of these changes could be described as catastrophic in their rapidity and extent. To avoid these, cities should develop in a sustainable manner where there is an equilibrium in the use of resources and environmental impact, (Cities-Alliance, 2007).

Sprawling development is low-density outward expansion of urban areas. Figure 4.5 illustrates this form of development, ill-equipped for the conditions that define the 21st century urban life (Odendaal, 2012). Associated with auto-dependence, and negative environmental and social impacts, it results in long hours spent travelling and traffic congestion, robbing commuters of many work hours. Sprawling development is one of the main challenges of spatial planning in the 21st century and is strongly connected with geographical, economic and institutional contexts (Poelmans & Rompaey, 2009; Verbeek et

al. 2014), an upshot of uncontrolled land economics (Bruegmann, 2005 in Echenique et al. 2012) and demonstrates the insufficiency of information and existing tools for urban policy (Barredo & Demicheli, 2003). This form of development reduces biodiversity, increases resource consumption (land, non-renewable energy) and greenhouse gas emissions and is socially unjust (Roger et al., 2006; Echenique et al., 2012). Certain that growth is a major cause of global environmental change, it is crucial to understand the patterns of change, (Shu-Li Huang et al. 2009). The peripheral development in many large urban conurbations are an evidence of poor response to growth, hence the urban lands encroach unguided into rural land (Banerjee & Southworth, 1990). Although urban areas constitute a small proportion of the land surface area of the earth, Shu-Li Huang et al. (2009), the significant changes in environmental conditions caused by urban sprawl in peri-urban areas cannot be ignored.



**Fig. 4.5:** Sub-urban low-density development  
**Source:** Trancik, (1986, 57)

This form of development is linked not only to ecological problems but safety and the general welfare of urban residents. The global warming, decline in air and water quality, and the rising cases of obesity and diabetes, not to mention the rising deaths rates are all consequences. This is an indication that the ways settlements are built have numerous consequences, (Duany et al., 2010; Næss, 2001).

It is therefore important to distinguish rural and urban space, Urban sprawl produces highly undesirable dispersed and fragmented landscapes, (Trancik, 1986; Poelmans & Rompaey, 2009). This problem can be addressed by urban design adopting mixed-use neighbourhood concepts; in recent times, city planning has promoted dense development focused around urban centres of employment and local services, thus reducing the need to travel long distances which makes cities more vibrant (Echenique et al. 2012).

#### 4.4.5 Social Stratification and Spatial Differentiation

Social disorganization increased along with the size, density and heterogeneity of places (Pacione 2005). The heterogeneity of the urban population applies to their social, cultural and economic aspects have impacts on the urban space. Researchers have identified social factors to impact the morphology of settlements systems, (Socio spatial structure). Socio-economic factors influence urban forms; it allows for settlement hierarchisation, services and facilities delineation based on classes. This implies that people can be segregated on one or more criteria into distinct layers, classes; mostly as determined by the accessibility to resources and power (Clark & Lipset 1991; McLeod & Nonnemaker 1999). The higher classes have strong economic power and affordability; hence, they have access to the best of the city. In ancient's cities, People were regulated to live in certain parts of the city, the proletariat as would later be classified by Karl Marx were restricted to areas outside the fortress walls and were called in when required, these ghettos were always the overcrowded slums and the centre of poverty, (Eisner, et al. 1993).

Social theorist has classified the society into groups; Karl Marx identified two classes of people in the society, the capitalist and the working class, Societies are organised in a hierarchical format based on ruler ship and subordination both determined by economic strength. Weber derived a stratification by examining the social structure of many countries. Karl mark defined from the capitalist view while Webber had two other components of status and power aside class. Social classification is grouped into three classes, the high (wealthy bourgeoisie), the middle working professionals and low classes; the upper class is generally smallest of the population.

Social stratification however viewed creates a differentiated spatial pattern that is exclusive and not sustainable. As may be applicable, those in the lower class are also on the low end of urban living and first victims of diseases and vulnerabilities. They live in places with poor facilities, and housing condition. These groups of people along with the middle-class lack financial security and most times do not qualify for mortgage facilities.

Societies can also be stratified on any number of other dimensions, (McLeod & Nonnemaker 1999). A study conducted by Oduwaye, established that ethnicity is a factor of settlements formation, people settled around places with common ethnicity. Spatial differentiation based on socio stratification is very evident in African cities. The colonial administration built the cities exclusive of the indigenous population such as the Government Reserved Areas in Nigeria and the apartheid landscapes in South Africa. The issues of social hierarchy are very



relevant to urban development consequent increased debates on exclusiveness and spatial differentiation in recent times. The development industry has a role to play in shaping and re-shaping the urban structure with consideration for these systems especially towards residential development, which is the most relevant kind of development for social structure. Land tenure determines ownership, security and duration of right to and use of land; it is a very important factor in land use and urban development. Land allocation is determined by the nature of the political-economic system in place (Harrison et al. 2003). Urban land has different tenure depending on the mode of acquisition and the process of allocation. The right to land occupation is either communal, royalty, customary tenancy or more recently the Land Use Act, guided and implemented by law. Land laws provide the legal power that enables planners to control the use of land for development, (Imimole, 2005). The traditional planning, colonial and post- colonial development framework arguably does not effectively meet the goals of sustainability. The urban poor have little or no access to land hence they take advantage of the rural lands, building in unauthorized and unsafe places.

#### **4.5 Conclusion**

The phases of city transformation show that space assumes and responds to the catalysts of politics, economics, security, population, industrialization, etc. The advancement of economics from local levels of business to international and global levels have impact on the urban space. Each stage has impacts on production and location of industries and housing. Technology advancement influenced modes of transportation, architecture and engineering. The spatial configuration of places changed due to enhanced mobility of people in and out of the city. The political ideologies are reflected, on spatial forms as evident in socialist and capital administrations, (Pacione 2005). Historical information offers knowledge on how cities grew, the factors that influenced their growth or decline and how spatial problems were resolved. Planning for cities varied over the years; the conception of urban space continues to evolve. The city is a combination of many individual group actions governed by cultural traditions and shaped by socioeconomic forces as well as transportation systems; modifications to any of these forces manifest in the city structure (Salingaros, 2005). Urban morphologists focus on these forces as they take shape on the ground and mould cities (Moudon, 1997). (Warner & Whittemore, 2012) note that planning for future cities requires an understanding and cognizance of the forces that shaped their past, uniquely reflected in their forms. This review provides background/baseline information for forward planning.

**CHAPTER FIVE**  
**THE CONCEPT, PRINCIPLES AND APPROACHES OF SUSTAINABLE**  
**DEVELOPMENT**

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## **5.0 Introduction**

Urban land consumption is a major concern globally, decentralization and sprawl has increased the use of land and the cost of providing infrastructure, (Zetter & White, 2002). Hence sustainable development is fundamental to research and policy issues of the 21st century (Brandon & Lombardi, 2005). New strategies are required to intervene in developing the evolving built environment for which traditional models have become grossly inadequate. Common elements of more recent planning processes include strategic spatial planning that effectively incorporates and integrates all the factors and actors of spatial development to create new spatial forms that are sustainable. The ideal urban form is dense, diverse with compact mixed land uses, (Jabareen, 2006). This chapter discussed the concept of sustainable development, its dimensions, principles and approaches of development.

## **5.1 The Concept of Sustainability**

Sustainability is an intricate life support concept made up of many components. It supports development that promotes fairness and aims to ensure continuity which is bedrock of the philosophy of humanity, (Langston & Ding, 2001; Næss, 2001). Sustainability adopts rational, scientific methods to guide the use of resources and general lifestyles. It is a multi-pronged response, futuristic, empirical and critical in approach to set objectives. The concept of sustainability cuts across disciplines, dimensions and applications.

Concerns relating to the depletion and exhaustion of scarce natural resources and impacts on the environment and urban living gave rise to the sustainability movement (Adams, 1994; Cities-Alliance, 2007). The need arose for “the heads that wear the cap” (stakeholders and professionals in collaboration with world leaders) to identify better ways of managing the environment alongside development to not jeopardise the future. The Brundtland Commission emphasises that development should be all-inclusive while ensuring that present and future needs are met without jeopardizing the natural systems on which life on earth is dependent; this applies to both local and global scales of development (Cities-Alliance, 2007). This is achieved under five-sub groups or dimensions as shown in Fig 5.1, comprising economic, social, natural, physical and political sustainability, (Pacione, 2009). Failure in

one aspect have impacts on other aspects of sustainability, which is why the agenda should be priority on national policy formulation and urban governance which is the unifying dimension. Economic sustainability is when productivity is maximized in a local economy to sustain itself without causing irreversible damage to natural resources on which it depends.



**Fig. 5.1:** Dimensions of Sustainable Development

**Source:** Author, 2018

While social sustainability is powered by policy towards improving quality of life, physical development is sustainable when the built environment can support a liveable and productive environment. Political sustainability enhances democratic processes and public participation in urban governance and planning. Although spatial development is one of the dimensions of sustainable development, it enhances the realization of the other principles (Ahmadi & Toghyani, 2011). It ensures ecological balance, reduced use of resources and minimal pollution or waste generation while enhancing, amongst others, social cohesion and economic growth. It ameliorates the consequences of poorly planned urban growth and ensures that cities do not dilapidate or grow into slums (Barredo & Demicheli, 2003; Elliot, 1999). The form of contemporary cities motivated scholars and experts to identify forms of human settlement that conserve resources while meeting daily needs. Viable development improves

the quality of life for all without increasing the use of natural resources beyond the environment's capacity to replenish. Due to the dynamism of urban land use, a flexible approach is necessary to meet the demands of change; therefore, a good plan should include procedures for adaptation to changing conditions and policies. Campbell, (1996) advised planners to combine their procedural and substantive skills through farsighted designs. This is because before a plan is fully implemented other factors might arise, rendering the initial plan unable to solve the anticipated problems or needs. The emerging consensus is that development is more sustainable if it produces a mix of uses which, if adequately implemented, creates attractive cities which are viable and safe to live and work in (Coupland, 1997). Models are developed to respond to emerging challenges; increase urban densities and creates new ways of enabling more people to live in existing centres through urban revitalization whereby old, worn out buildings are replaced with vertical, mixed-use development. Other aspects of sustainability (in no order) are functionality, aesthetics, safety, circulation and the general liveability of present and future cities.

Williams et al. cited in Jenks and Burgess, (2000) state that sustainable urban forms will be achievable if they are underpinned by a policy background which integrates local formations, strategies and solutions with global goals. Achieving this goal requires the setting of developmental goals and commitment from the public (Næss, 2001). Government should set up frameworks that regulates other performance dimensions. It requires an understanding that inaction has consequences and that innovative ways must be found to change institutional structures. This involves an active and responsive policy system at all levels from the individual to the global (Langston & Ding, 2001).

## **5.2 Sustainable city form**

Sustainability is the ability of carrying capacity to maintain life in all its forms. Cities metabolism; consumption of resources and waste generation in the process of development and function are influenced by its form. Hence city forms are linked to environmental problems, (Yosef 2006). Cities should therefore be self-regenerating just like the ecosystems where everything is related; a change in one policy or use can affect the transportation system, infrastructure and economy, (Langston, 2001; Salingeros, 2005; Cities-Alliance, 2007).

The concept of urban metabolism is fundamental to developing sustainable cities and communities, (Kennedy et al. 2010). While in other respects parallels can be made between

cities and ecosystems, the model of a natural ecosystem is most suitable to develop sustainable cities as natural ecosystems are generally energy self-sufficient, (Kennedy et al., 2010). Lynch, (1982) however, argues that ecological systems are made up of unthinking organisms hence the concept of metabolism may not necessarily apply to settlements.

Sustainability ensure an improved environment and quality of life; hence it is mandatory to use resources proportionately and restraining possible impacts on the natural environment, (Barredo & Demicheli, 2003; Newman & Kenworthy, 2006).

Several Authors have postulated common attributes of sustainable city forms to include diversity, housing variety, and maximal use of land, mixed use, density and greening, (Don and Ray 2002; Breheny 1992, Lynch 1960, Yosef 2006). While Don & Ray (2002) outlined them as crucial correlation indicators for sustainable development, Yosef (2006) identified them as design concepts.

The sustainable city is compact and flexible in which all the parts are connected to one another and to the whole within a clearly articulated public space. The public realm connects the different quarters across the city while also linking individual homes to work places, schools, social institutions and places of recreation (Moughtin, 2003). Asomani-Boateng believes that precise place attributes identification and definition is important for spatial planning. He therefore suggests that strategies based on indigenous urban forms that embody local people's culture, aspirations, experiences, and values are consistent with the concept of sustainable urban development.

Approximately two-thirds of the population of Lagos currently lives in muddled development and slums, (Oduwaye, 2006; Agbole & Agunbiade, 2009), In a living city, different types of urban systems overlap to build the complexity that keeps the city vibrant. Zoning non-interacting units together creates chaotic and poorly functional systems, (Salingaros, 2005). Laws and regulations should reconnect urban units, maintain or increase the quality of the environment, as opposed to rigid controls and mono-functional zoning systems. New and strategically formulated legislation can recreate a city to align with the principles of sustainable development.

Cities are key points for stimulating large scale economic transitions, (Goven et al. 2012). They compete to develop their local resource base and improve their position (Jenkins & Wilkinson, 2002). Mega cities such as Lagos are core areas for global competition; improving their competitiveness and resilience is priority. It is therefore necessary to strengthen them through appropriate planning and effective land use distribution that will promote competitive innovation and entrepreneurship. Ignoring these trends and demands

will ultimately lead to reduced investment, thus limiting domestic resources. Todes, (2008) suggests that planners develop a deeper understanding of urban economic space and the mechanisms by which planning relates to markets.

Adams, (1994) states that, urban planning works through the market, affecting the value of land and creating potentially lucrative development opportunities. He adds that the extent to which the authorities can successfully influence the development process is dependent on the resources they can attract, the powers with which they are entrusted and particularly the depth of their relationship with landowners, developers, investors and other significant actors.

### **5.3 New Urbanism: Philosophies for Sustainable Spatial Development**

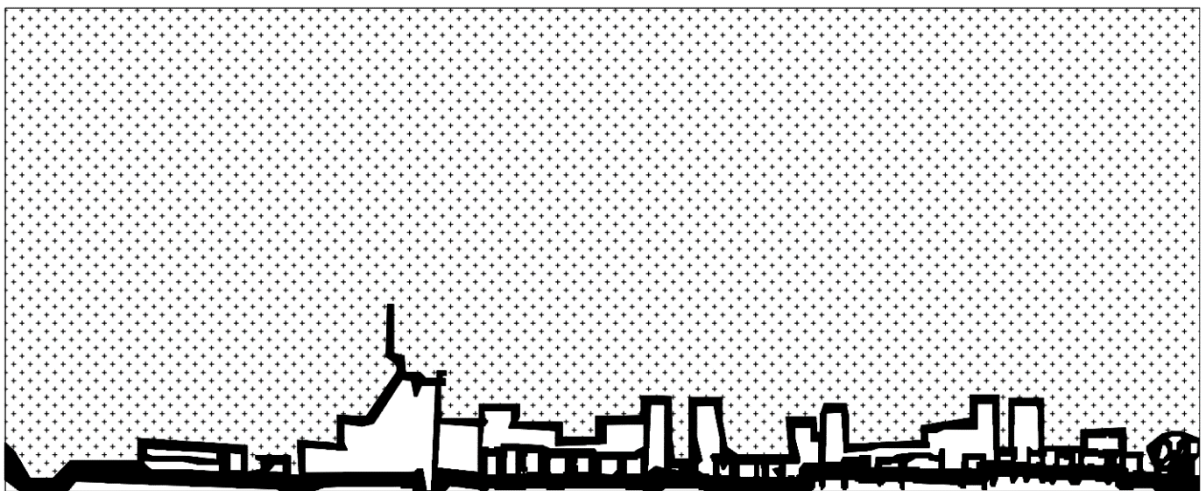
The growing proportion of city-based population has stimulated research and policy for urban settlements, (Longley, 2005). The interest in sustainable development influences practical approaches for land use and policy as decision support instruments, (Briassoulis, 2000). The need to minimize the impact on the environment brought about new principles of development, (Barredo & Demicheli, 2003; Kennedy et al. 2010).

A city is sustainable if it reduces its resource inputs, of which land is one (Adetokunbo, 2010). Eric et al., (2007) recommends collaboration of policy makers and stakeholders towards policies that best address land use and development. Following the crises associated with climate change, environmental degradation, and failing infrastructure, many cities are adopting policies driven by the need to manage growth, encourage more compact, diverse and flexible communities, (Cynthia, 2010; Duany, 2010). Wai, (2012) recommends that key elements of urban quality, which maintain a city's viability and sustainability, must be identified to avoid mistakes.

Sustainable urban forms are compact, low-impact developments (Duany et al. 2010; Moudon, 2000). They exhibit high levels of variety; smart walk-able neighbourhood development and quality of urban space (Daniel & Boshoff, 2003). This type of development is self-sustaining and encourages optimal use of resources and infrastructure, creating additional opportunities (Kaido, 2005). Achieving a compact urban form calls for efficient and intensive use of urban land by increasing the density of development, (Jenks, 2000). Land utilization is determined by the relationship between plot coverage and floor area ratios (Imimole, 2005).

Current interest in policies for compact cities dates to 1980s after the Brundtland report (WCED, 1987) and the UNCED Agenda 21 proposals (1993). It is commonly asserted that

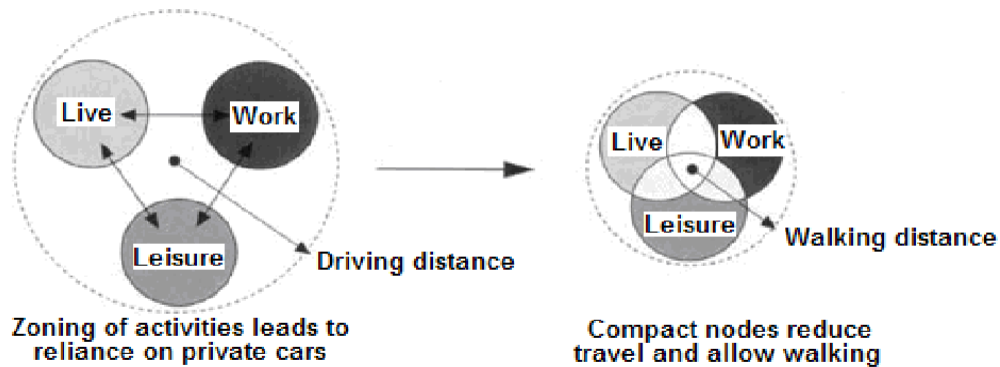
this form of development is best able to sustainably accommodate growth by reducing travel distances and conserving land (Kaido, 2005; Echenique et al. 2012). Compact development allows people to walk from home to work and shops and limits sprawl. The actual setting or changing densities directly influence the character and functioning of the city (Banerjee & Southworth, 1990). High density ensures the maximisation of public investment including infrastructure, services and transportation and allows efficient utilization of land (Laban & Washington, 2001). Howards planned for 30 houses per hectare, Moughtin (2003), believes sustainable urban forms require densities much higher than 20-30 houses per hectare, He suggests high densities of 70-100 dwellings per hectare will be more sustainable. Such developments use significantly less land and consequently reduce travel distance as illustrated in Fig. 5.2. and 5.3.



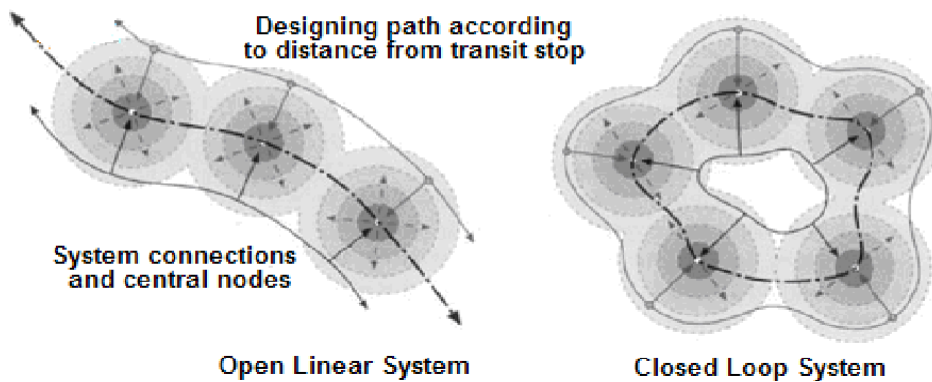
**Fig. 5.2:** Compact land utilization

**Source:** Trancik (1986, 57)

**Compact mixed-use nodes reduce journey requirements and create lively sustainable neighbourhoods**



**Compact nodes linked by mass-transit systems can be arranged in response to local constraints**



**Fig. 5.3:** The Compact Sustainable City

Source: Rogers (1997, 38)

It can be indicated that density is one of the most important indicators and design parameters in human settlement planning. This concept is best suited to typical megacities like the Lagos metropolis, due to restricted developable land caused by challenging topologies and wetlands. Mixed-use development is a term used in contemporary urbanism; it is the mix of different land uses in the same geographical area and is making a positive contribution to planning policy (Narvaez et al. 2013). Urban renaissance is a revitalization tool and is conventional wisdom in spatial planning; it promotes public transport usage, cultural vitality, and better urban design that is free from conflict (Rowley, 1996; Gordon & Richardson, 1997, Hoppenbrouwer & Louw, 2005; Freestone, 2008). Mixed-use approaches emerged in response to critiques of modern land use planning and awareness of the negative impacts of sprawl (Angotti & Hanhardt, 2001), which is considered the most critical land use issue in



many regions (Clark, 2010). Planning synergies primary and secondary uses without conflict where retailers and customers' interactions, expectations and needs are met, (Rowley, 1996; Grant, (2002). Angotti & Hanhardt, (2001) assert that no community is or ever was entirely mixed-use or single use; all cities mix and separate uses to different degrees and textures at different times; the balance is subject to careful planning. Hence, zoning laws are being revised accordingly to achieve a dynamic, meaningful and pluralistic urban environment with sense of place (Parker & Doak, 2012).

The complexities and risks of property development have led developers and the property market generally to become increasingly specialized within the commercial sector, working against mixed-use development. Hence the mixed development has had uneven success; (Freestone, 2008). Rowley, (1996) outlines the factors that work against new mixed developments and those perceived as drawbacks for existing mixed-use development. The high capital involved coupled with the cost of land acquisition, design and construction, planning approvals, and differential income streams deters investors and makes developers reluctant to venture into this kind of development. Grant, (2002) adds that in some cases cultural and economic forces impede the adoption of this form of development especially where culture promote the separation of land uses. Land policy is also very important as it defines land use and development patterns. With careful planning and government intervention through incentives and supporting policies, these challenges and problems can be alleviated. It is argued that investors in the built environment be encouraged by rewards, low interests funding, infrastructure and specialised technologies.

#### **5.4 Techniques of Sustainable Spatial Development**

Successful urban places must combine quality in three essential elements, physical space, the sensory experience and activity, (Montgomery, 1998). The relationships of urban features and infrastructures yield spatial forms. Fundamental aspects of sustainable physical forms should be vital, fit, sensible, control and accessible. (Lynch, 1960). Different approaches can be used to achieve sustainable forms as may be most appropriate after evaluation. Angel, 2012 grounded on four propositions, proposed an alternative "Making Room Paradigm"; in alignment with the projected expansion of cities predominantly in rapidly urbanizing Asia and Africa countries. The recommendations are to rather prepare towards accommodating urban growth than contain it; maintain sustainable densities limits, increase or decrease city densities as may be necessary, avoiding strict growth management policies (containment)

while ensuring adequate supply of land and infrastructure.

Intensification is a major strategy for achieving compactness; it enhances efficient use of urban land by increasing the concentration of development and activity. This includes subdivisions, conversions, extensions and in some cases urban redevelopment (Jenks 2000, 243).

Decentralization as implied by the name, is a concept that enables regional development. It develops a multi core urban structure in which the functions of the city are dispersed to reduce distances between places of employment and residence, (Pacione, 2005). The government of Tokyo adopted this approach in response to the consequent challenges brought about by the urban agglomeration. The government encouraged decentralization through construction of techno- poles, and small cities.

Urban Containment is a growth management approach designed to control urban development; it controls outward growth of low-density development, (Jabareen, 2006). Citing Nelson et al. (2002), (Jabareen, 2006) defines urban containment as deliberate use of policies and regulations to influence the pattern of growth and development towards a proposed or expected need and forms. He concludes that though not all growth management policies include urban containment, but a containment program that projects and plans for growth would qualify as a growth management program. Urban containment policies enable concentration of development in the inner cities, it initiates research and approaches toward optimal development of available space in the core city as developers have limited alternatives.

The success of this policy is dependent on the ability of the government to make support policies and regulations along effective enforcement mechanisms to check compliance and implementation. (Jabareen, 2006) citing Pendall, Martin, and Fulton (2004) outlines the objectives of urban containment policy. This policy apart from restraining outward spread of cities set out to achieve optimal utilization of facilities and infrastructure, preservation of natural resources and farmlands, conservation of cultural places, innovative urban development, reuse of space and gentrification, high density mixed use development. This policy is flexible and applicable to diverse and almost every aspect of urban planning and development. It may be used to control non-spatial aspects of urban development like the control of services and provision of facilities towards influencing development decisions.

Several spatial techniques are used as may be determined by the objective of the plans and expected outcomes. Urban spaces could be delineated for preservation or a boundary of

delimitation is set for development. As postulated in the garden city concept by Howard, Greenbelts and buffers are used by this policy to control growth. A delineated part of the city is zoned for preservation as open space, or recreational facilities. The Urban growth boundaries (UGBs) approach use-zoning codes to delimit development boundaries. This enhances Gentrification, a process of renovation and revival of deteriorated urban Neighbourhoods while ensuring inclusiveness and protection of the low-income population who most times are priced out of the city

Campoli and MacLean (2007) with reference to Frederick law Olmsted who grounded on the restorative power of nature designed open spaces and parks in the nineteenth century cities endorsed greening as a growth management mechanism. While highlighting the components, benefits and indispensable roles of green infrastructure which includes natural elements; “open spaces, parks, trees, and “keeping the environment serene, “preserve air, water quality and sense of place”, they (Campoli and MacLean) advised that neighbourhoods must be closely linked with greenways to achieve interior compactness. Campoli and MacLean *ibid* further emphasised that green infrastructure are as mandatory as other facilities (roads, pipes) for effective and sustainable city development, function and form.

#### **5.4.1 Urban Revitalization - Interventions and case studies**

Africa is the fastest urbanizing continent. UN-Habitat 2010 cited in Goven et al. (2012) predicts that by 2030 most Africans will be urban residents and that most will live in slums and informal settlements unless radical corrective measures are taken. Thus, existing cities should be managed rather than creating completely new ones. Urban revitalization or renewal is one of the tools to achieve sustainable urban forms. Moughtin, (2003) highlights conservation of both the natural and built environment as one of the principles of sustainability; this prioritizes the reuse of buildings, infrastructure, roads, materials and components.

Scholars describe the use of land in Lagos as unsustainable; the mega city’s physical attributes correspond with the checklist depicting the Phases of Urban Decay drawn up by (Gbadegesin et al. 2011). Underutilized land is described as Lost spaces and contribute to urban decay; while they are a sign of inefficient urban planning and a dysfunctional land market, they present opportunities for urban renewal and revitalization, (Brown-Luthango et al. 2013). Larangeira, (2003) in Brown-Luthango et al. (2013) argues that vacant lots offer an opportunity to introduce new uses, to implement development programmes, and to start

revitalization plans with compact, efficient land use. As evident in contemporary city planning, urban planning can intervene through urban renewal approaches to achieve sustainable cities. Regeneration and/or restructuring approaches are re-shaping cities in unforeseen ways (McCarthy, 2007).

In the mid-19th century, Georges-Eugene Haussmann was commissioned to plan Paris in response to the poor and deteriorating urban environment and the congestion and traffic jams which impeded the free flow of traffic (Panerai et al. 2004). He established a massive urban renewal movement in France on the mandate of the government. Slums were cleared and replaced with varied housing classes, increased densities, wider roads and mixed-use development. The plan incorporated aesthetics, functionality, orderliness and the other attributes of a good city that are still evident in the French urban form, not only creating a liveable environment but also stimulating growth (Panerai et al. 2004). The project embraced holistic planning, urban design, urban renewal, development control and enforcement both in the centre of Paris and in the surrounding districts. It made provision for transportation and the figure ground relationship and the provision of open space guided the arrangement of the components of the environment, facilities and monuments that in turn determined the silhouette of the city.

Since the 1960s the debate on urban form has emphasized urban containment rather than urban dispersal and has preferred conservation and rehabilitation to clearance and redevelopment, paying more attention to sustainability and alternative urban forms (Adams, 1994).

Mixed-use development can be achieved in two ways Næss, (2001), reclaiming lost spaces, and high capacity buildings. In order to preserve bio-diversity and to save cost on capital intensive facilities such as new roads, sewer, water, and electricity, density is preferred in built up areas with existing functional infrastructure and services to serve a growing population, (Angel, 2012).

These strategies were adopted in the United States where the densities of existing urban communities were increased and in the United Kingdom where brand new higher density settlements were built, (Coupland, 1997). In the US, several lands uses were mixed (Hoppenbrouwer & Louw, 2005). Echenique et al. (2012) note that the British government operated a highly restrictive land use policy that constrained the supply of new houses and limited lifestyles; over 70% of new developments in Britain are taking place on previously developed land at high densities to protect and conserve Greenfield land. The policy locates

development in existing centres close to services and facilities, thereby reducing the demand and need for cars.

An empirical study by Jayantha & Lau, (2008) on floor Space per Person (SPP) and housing development in Hong Kong postulates that population growth leads to an increase in SPP which calls for more land space for residential development. Hong Kong is a densely-populated city with more than half of its people living and working in urban centres. Lagos has many similarities with Hong Kong, having experienced rapid urbanisation over the past three decades, with high urban population density and a relatively small land mass that intensifies building and economic activities in the inner city.

In line with The Netherlands compact city objectives, Amsterdam Municipality Hoppenbrouwer & Louw, (2005) prepared structured plans to prevent uncontrolled urban sprawl and encourage the revitalization of the harbour in the city's Eastern Docklands. It was decided to transform the area into a residential area, and increase housing quality and quantity, and employment by intensifying the use of land and concentrating Greenfield developments within existing built-up areas. Coincidentally, it has the same attributes as the Lagos metropolis as it was traditionally a prosperous harbour for the trans-shipment of general cargo and bulk goods. The scheme included approximately 8,500 dwellings, approximately 100,000 square meters of commercial space and approximately 20,000 square meters of educational and service facilities with an urban character, with high building densities of 100 dwellings per hectare of land.

The need for a paradigm shift in development beyond the traditional approach to a more holistic approach that ensures economic stability and neighbourhood integration led to mixed-use development in the Western Cape in South Africa by a company called communiTgrow (Goven et al. 2012). The development, which is located on the urban edge of Cape Town aims to reduce the housing backlog by simultaneously offering affordable housing and socioeconomic sustainability. The project will be developed over a 20-year period and will comprise approximately 200,000 housing units as well as supporting infrastructure such as transportation, educational institutions, and the full spectrum of municipal services. It involves the public and private sectors and other stakeholders. Residents are fully involved and can invest in the project, thereby making them co-owners of the city in which they live. The project accommodates all income levels; thus, income will no longer be the primary determinant of location within the new city nor will ownership of private vehicles be a requirement for access to infrastructure and services.

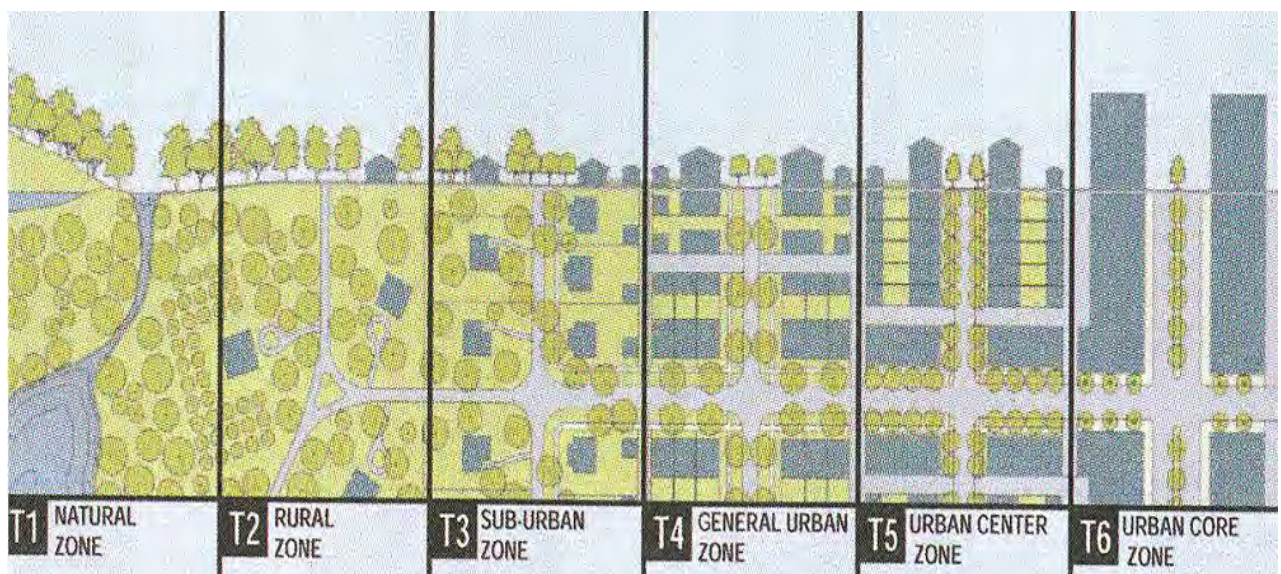
Given that these achievements were possible despite the challenges confronting other cities,

the study recommends for the adaptation of these approaches as may be appropriate to achieve sustainable development. If the environment is likened to the ecosystem, which is capable of replenishing and recycling, renewal and revitalization is mandatory for urban systems to ensure continuity, which is the bedrock of sustainability. Where this is not done at proportionate levels and within appropriate time spans, decay will be inescapable.

#### 5.4.2 Planned expansion: Incremental densification - the transect plan

Growth is inevitable and must therefore be planned for and shaped into intelligent form through regional plans that are based on a mixed-use neighbourhood model that is organized around the logic of the rural to urban transect. This also mimics the ecosystem; it progresses through a sequence of habitats with each supporting symbiotic set of all the components or elements of the system, ranging from the microclimate, to flora and fauna. The rural to urban transect extends this classification system to include a sequence of human habitats of increasing density and complexity, from the rural hinterland to the urban core where the design of every level should correspond to the logic of transition from the natural edge to the man-made core, ensuring consistency and mutual support. Transportation, planting, buildings, setbacks, and all the myriads details of the human habitat vary across transects. In the United Kingdom, the Town and Country Planning Association strongly advocates for planned urban settlements as an intermediate form of development, or new towns.

Fig. 5.4 shows development in incremental densities towards the central urban core.



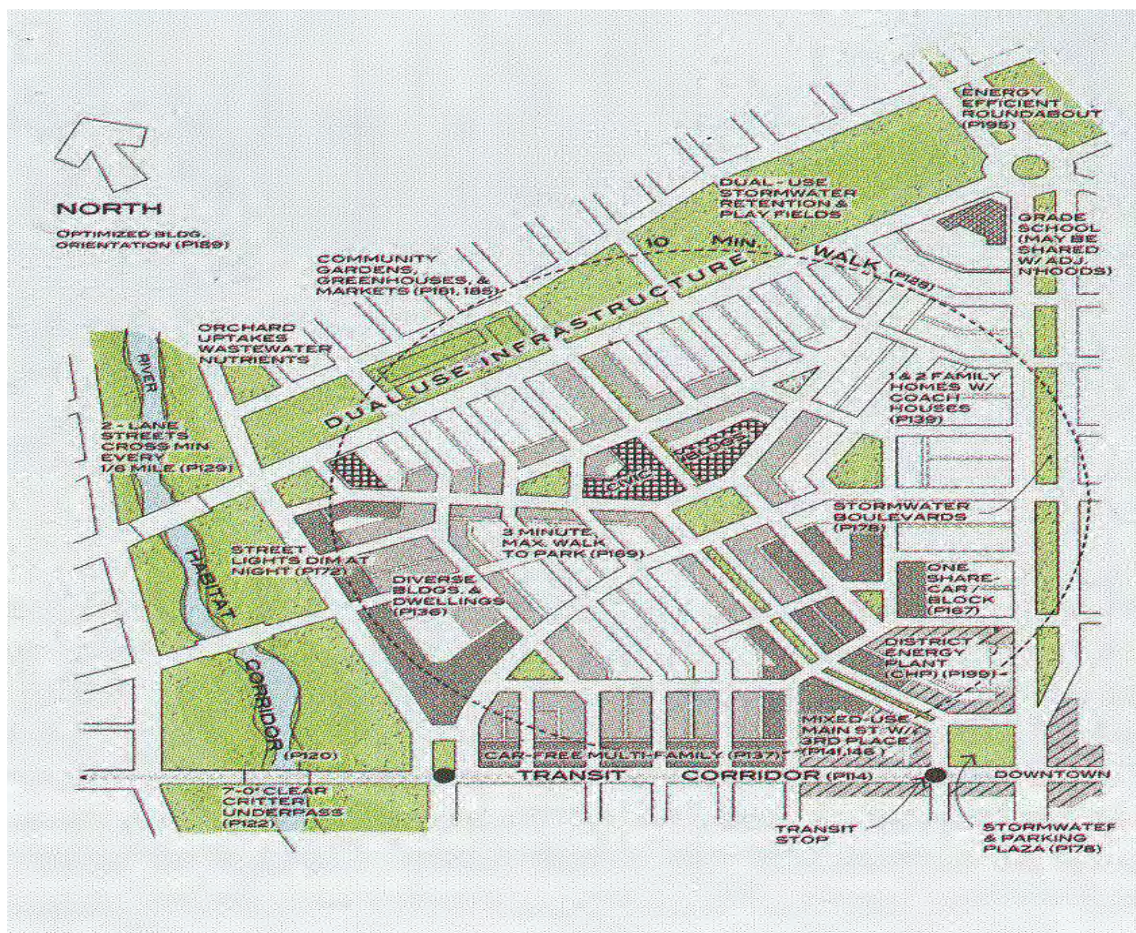
**Fig. 5.4:** Incremental densification plan  
**Source:** (Duany et al. 2010)



This form of development is based on a rational theory where the urban core with most population, commercial activities and consequently more demand for land is densified for maximum utilization. The intensity of use decreases with distance from the core into the natural zones

### 5.4.3 Neighbourhood plans

The term Neighbourhood technically means being compact, walk-able, diverse and connected; land is not wasted and the area is typically not larger than half a mile across, see Fig. 5.5. Its small size corresponds to a five-minute walk from edge to centre and all its streets are pedestrian friendly, providing for all daily needs, from shopping to work to housing and living arrangements. It is also connected seamlessly to transit roadway and bicycle networks. The Neighbourhood is not an invention or innovation but has been the fundamental human settlement throughout history, interrupted by suburban sprawl. Traditional villages, towns and cities across time and cultures all followed this basic model.



**Fig. 5.5:** The Neighbourhood Model  
**Source:** Duany et al. (2010: 1.5)

The smart growth of a region can be measured by the strength of its Neighbourhood structures (Duany et al. 2010). Except for regional scale and special use districts, growth should be organised in Neighbourhoods. A metropolis is composed of regional centres, Neighbourhoods, districts and corridors. Unjustified districts are characterized by developments that cause social fragmentation and traffic congestion and can be rezoned by plan and coded to encourage additional uses (Duany et al. 2010).

#### **5.4.4 The multiple and intensive land use (MILU) concept**

The MILU concept was designed by Dutch researchers based on the concepts of convenience, connectivity, comfort and artificial ground towards compact city development, resulting in high density, mixed use city growth (Zaman et al. 2000 cited in Chen et al. 2008). The central theme is to intensify the use of land resources within single sites through high residential densities and mixed-use land uses supported by public transport and pedestrian facilities. It facilitates 24-hour operable CBDs and convenience which is an underlying theme for this form of development as it enables fast travel between home and work, access to transport facilities and other advantages of the compact city form, (Burgess, 2005 cited in Chen et al. 2008).

Problems of land scarcity and population growth in Hong Kong where only 21% of the land is developable with the rest surrounded by mountains and water led to the adoption of the MILU concept. The concept stipulates more than six uses, i.e., residential, commercial, recreation, institutional, transport and community for mixed use (Stephen et al. 2005). A standard mix of various uses is a precondition for sustainable urban development in Hong Kong arising from market forces rather than from a formal planning mechanism, suggesting that market value is very important to land use and cannot be ignored in planning decisions. This mixed-use development adopts the convenience and sky city concepts, driven by facilities and infrastructure that promote easy access always and active CBDs that can operate around the clock. Driven by the concepts of verticality, compactness, convenience and sky city living, this approach could be adapted in typical megacities like the Lagos metropolis.



## 5.5 Overview of Sustainable Development

Sustainable development is not a detailed plan of action or formula that can be followed blindly. There is no one solution to urban problems; appropriate remedies differ between places, times and resources (Langston & Ding, 2001). The concept of sustainable development is highly adaptable and does not discriminate between fields of studies. It incorporates the concepts of preservation, conservation and best practices towards achieving a better future. However, some fields of study have made a more significant contribution to sustainable approaches to development than others (Green, 1990 in Adams, 1994).

As reviewed, it consists of five dimensions that collectively ensure sustainability; these dimensions are not effectively integrated into planning theories, thus, only partial environmental issues are dealt with. Næss, (2001) observes that though literature on the spatial and physical features of sustainable cities abound, these have not been the focus of the literature in planning theory. Many scholars do not clarify what they consider to be the applicable content of sustainable spatial planning.

The politicization of this concept makes it of limited impacts on development; the concept of sustainability is more written on and spoken about than implemented. While several forums, groups, stakeholders and researchers have come up with brilliant and articulately written reports and proposals, they are yet to grab the attention of policy makers for implementation, Developing countries have a reputation for poor policy formulation when it comes to adaptation of technologies and approaches to mitigate harmful environmental consequences and are slow to adopt available approaches. Soneye, (1999) cited in Agamah, (2008) states that third world countries tend to only recognize the opportunities offered by technological innovation and diffusion after such technology is already obsolete.

In the past, developed countries with similar demographic characteristics to Nigeria responded to challenges of the built environment and the environment in general. However, cities like Lagos have yet to fully embrace, let alone implement, such strategies. In 1990, the UK government published a White Paper entitled “This Common Inheritance” in response to widespread environmental concerns. It acknowledges that land use planning can help preserve the best of the present environment for future generations (Adams, 1994; Echenique et al. 2012). If cities are to be the home of humanity’s future, they must be socially equitable, economically successful, and environmentally sustainable (Cities-Alliance, 2007).

Planning for future cities is among the critical global issues of the 21st century as more than half of the world’s population lives in urban areas and by 2050 that proportion will rise to

70% (Cities-Alliance, 2007, 72; Wuppertal Institute for Climate Environment Energy, 2009, 279). It requires the joint contribution of decision-makers, the city government, urban planners, investors and the general population (Cities-Alliance, 2007). It also calls for integrated concepts of economics and management, and fresh planning approaches that use new design instruments (Salingaros, 2005; Beggs, 1991 in Adams, 1994). With little or absence of attributes of sustainable spatial development, the study argues that the concept of sustainability is yet to form a core principle in urban governance and planning in Nigeria.

## **5.6 Conclusion**

Sustainability is continuity, driven by the philosophy of inheritance; it is achieved when meeting the needs of the present do not jeopardise the opportunities of the future from meeting their needs. Though this study emphasises on the sustainability of spatial development there are other aspects of politics, economics, social and nature. The issues of sustenance are a global problem and require multi institutional, policy and disciplinary interventions.

This chapter having defined the concepts of sustainability outlines its principles and methods. Though varied in approach have common goals for increased density, Housing variety, reduced travel distance, Pedestrian friendliness, mixed-use development, Friendly transport modes, reduced pollution and waste generation. With the knowledge of sustainability, the next chapter discussed urban planning and objectives, the process and control of development to remain within the confines of these principles.

## CHAPTER SIX

### URBAN PLANNING AND MECHANISMS OF DEVELOPMENT CONTROL

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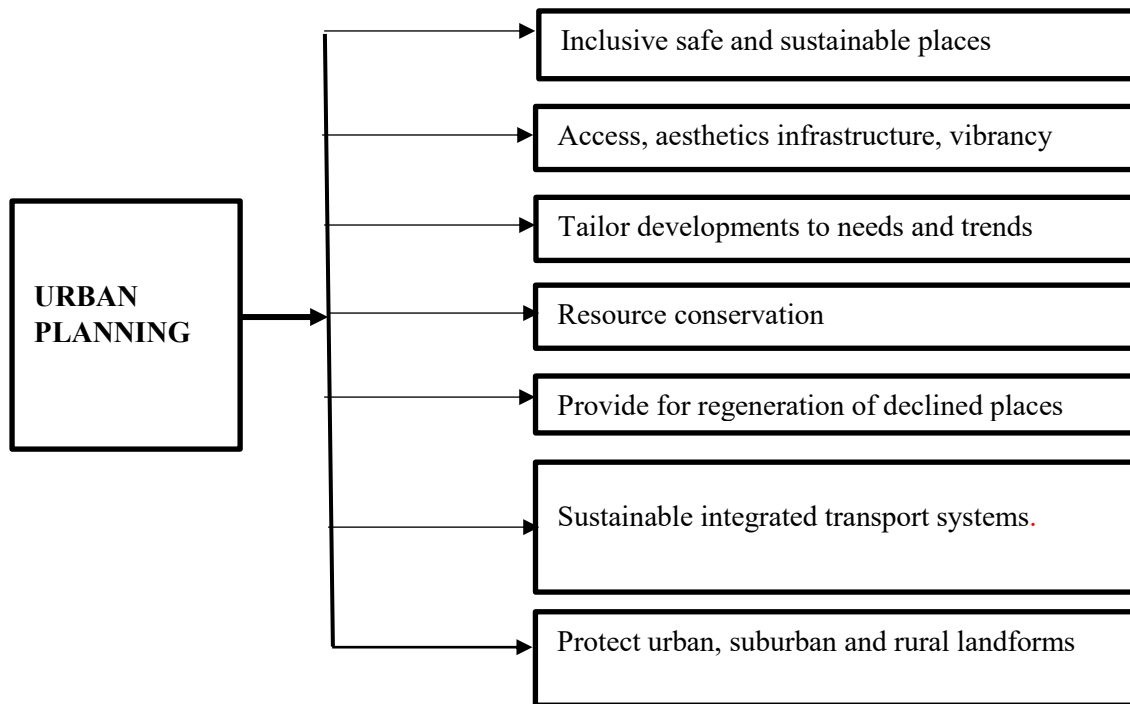
#### 6.0 Introduction

Urban planning is a utilitarian tool that implements the objectives of sustainability; its administration is towards implementing development plans. As implied, it involves the complex tasks of spatial organization and development while forecasting growth, as guided by laws and regulations. Planning coordinates the dynamics of land use, the transport, workplaces, the population and housing (Rodrigue et al. 2009). It seeks to provide sufficient housing and a safe environment for the growing population amongst others indicated in Fig. 6.1. It is a regulatory intervention in development with the primary objective of creating beautiful, healthy environments for living, working, recreation and movement. In this regard, physical planning covers all aspects of natural or man-made resources towards achieving sustainability (Bramley & Lambert, 2002, Cullingworth & Nadin, 2002).

Oyesiku, (2002) defines physical planning as the orderly spatial arrangement of land uses and other ancillary human activities; involves decision making, integrating proposed developments and strategies for renewal and revitalization of existing cities (Keeble, 1983). It organizes functional relationships while ensuring availability and accessibility to facilities. It ensures suitable development within the limits of available resources. Planning provides for harmonious co-existence of land uses; it determines the possible utilization categories which are further sub-divided into specific sub-uses (Donald & Gert, 2004).

(Adams, 1994) identifies three main instruments of urban planning which can achieve an appropriate spatial relationship between land uses if implemented effectively during the development process:

- Development plans indicate land for specific uses and allocate land for development while reserving certain places for conservation.
- Development control provides an administrative mechanism for the planning authority to implement the plans; it enables scrutiny of specific development proposals in line with the plans to decide whether to approve or otherwise.
- Development promotion is an incentive by the government to encourage developers. This occurs when the authorities stimulate development by promoting and marketing locations, making land available to developers and providing grants and subsidies (Todes et al. 2010).



**Fig. 6.1:** Objectives of urban planning

**Source:** Author, 2018

## 6.1 Urban Planning: Traditional and Modern Approaches

The reference to evolved indigenous settlements illustrates that while not formally or professionally done; planning is as old as the relationship between human kind and the environment. The account of the creation in Genesis 1:2-5 records that the creator of the earth planned. The earth was without form; an environment that was not sustainable hence the need for planning before the provision of energy; the creation of light. The creator knew that even though He might bless humans, without a good environment they would not be successful. He therefore had to plan by reordering the use of land before going ahead to create and eventually bless man. He further planned a compact garden city with proximity to work; this act of creation is not sustained in the quest for more space for growth and prosperity. This is in line with arguments and dimensions of sustainability; that irrespective of the available opportunities and resources in urban centres, without a sustainable urban form, economic growth and general prosperity is jeopardized. Poor urban planning and management can have grave results for the urban economy and the environment (Cities-Alliance, 2007). This is because an unorganized environment requires more resources to run, consumes more energy, and demands more travel time and loss of productive work hours and profits.

Formal urban planning originated as a response to the appalling living conditions in 19th century cities. It is mainly an outcome of government concern and responsibilities due to the quantum of legal powers and resources it requires (Keeble, 1983). It involves legislation, delimitation of space into jurisdictions and empowering government hierarchies to implement plans. The focus of spatial planning was the physical design of areas through plans, this, should be more closely linked with strategic infrastructure planning and implementation (Todes, et al. 2010). This implies that planning is not static or inflexible; it is a problem-solving instrument, which can adapt to settlements' needs and uniqueness. Urban planning without consideration of the uniqueness of a settlement and its carrying capacity lacks reflexivity, intellectual diversity, depth and honesty; the result will be a non-adaptive, routinized activity that thoughtlessly replicates development patterns (Van-Assche, 2013). Comprehensive planning and expertise is required (Van-Assche, 2013).

### **6.1.1 Comprehensive Plan**

Comprehensive master plans aim to develop detailed plans for land use configuration (Todes et al. 2010). As its name implies, it encompasses all aspects of planning; bringing together analyses of the social, economic, and physical characteristics. This plan is the overall blueprint of development; it presents the general goals of development in the metropolis and outlines the requirements that guides planning proposals and other development plans. It defines the zones, types of development and permissible uses, criteria for roads and carrying capacities, requirements for dwelling units, (types, density, height and plot ratios, plot coverages, ventilation), central service areas etc. Comprehensive planning enables consideration of all possible actions and their consequences and the selection of the best alternative (Oliveira & Pinho, 2010). This includes consideration for socio-economic opportunities, growth and projecting for future development, preserving natural resources, identification of vulnerable and suitable lands for development. In these mission, the planner is considered the master designer of the built environment, arranging land uses towards balance and order in the city, (Oliveira & Pinho, 2010). However, other approaches of planning have gained relevance due to the complexity of cities' problems (Plessis, 2014). Todes et al. (2010) note that, while master planning has been able to achieve some of the objectives of planning, it is criticised for being fixed; it tends to freeze a dynamic, growing organism in a document and does not make adequate allowance for adaptation and changing economies, lifestyles, population and even physical environment. Adams, (1994) emphasises

that the attributes of the built environment are continuously evolving and are shaped by people, including landowners, developers, investors, politicians and ordinary members of the public as they relate to one another and react to the pressure of development and growth. Master planning thus is confronted by many challenges, including poor estimates of population, over-generalization and poor implementation, (Todes et al. 2010).

While of tremendous relevance to contemporary urban planning, comprehensive planning will not be able to address failing capacity and poor urban living conditions unless it is integrated with social and economic planning (Catanese, 1988). Adams, (1994) opined that if urban planning is to intervene effectively in the development process it is essential to understand what happens behind the scenes, a conceptualization of the development process to assess the contribution of actors, the significance of specific events and the complexity of the relationships that make development happen. New approaches to planning define planning principles; spatial planning has shifted from simply land use to new forms of master planning focused on urban design and regeneration initiatives (Todes et al. 2010).

### **6.1.2 Land use planning: Zoning and Urban Land Sub-division**

Land use plan is an element of a comprehensive plan, future oriented and apart from determining the use of land; it identifies the areas and aggregates dedicated to these uses. It involves aspects, types, densities and intensities. It can be carried out at any level of government and require existing information or entirely new research towards providing for the set targets and objectives for development. Land use plans are drawn with consideration for trigger factors, size and types of place.

Zoning is one of the government policy used to guide physical development, (Oyesiku, 1998). A zoning ordinance governs how the land may be used and the size, type, and number of structures that may be built on it, as well as the kinds of activities which will be acceptable. It considers areas for open spaces, and residential, commercial, industrial and other land uses with specified intensities. This should be carefully planned as uneven allocation of land uses can have the same consequences as absence of planning.

Zoning is used to control the use of land through local planning agencies and councils in their respective jurisdictions. Functional zoning being previously the main development control tool is aimed to differentiate and segregate incompatible urban functions (Daniel & Boshoff, 2003). Grant, (2002) notes that this kind of development and the creation of single use districts originated in North American cities with the arrival of industrialization in the 20th

century; land uses such as industry were segregated from residential areas as they were considered incompatible. City planning therefore seek to enhance safety and efficiency by creating buffers between activities especially industries that were deemed noxious (Angotti & Hanhardt, 2001).

Zoning is held responsible for isolated, automobile-dependent Islands; places that are exclusively designated for business use are deserted after business hours. It does not promote city vibrancy as parts of the city shut down at certain times. Aside from under-utilization and restricted returns on investment, this encourages crime and other unauthorized activities in such zones. Amongst other scholars, Rowley, (1996) notes that this situation can be corrected by policy.

Daniel & Boshoff, (2003) concluded that the sprawling city is one of the legacies of extreme zoning and recommended higher levels of mixed use in neighbourhoods and minimal zoning for highly incompatible functions as well as those, which require a large reservoir of land for their future growth.

Increased urbanization and population growth in the 21st century and its impacts on the environment and the general welfare of urban residents led to a new approach to zoning in the form of mixed-use development (Grant, 2002). Scholars such as Jane Jacobs argued that a mix of uses is vital for a healthy urban area as diverse uses mutually support one another both economically and socially (Angotti & Hanhardt, 2001). Jacobs advocated for planning that integrates primary and secondary uses, the latter being derivatives of the former, where retailers and customers' interactions, expectations and needs are met, (Hoppenbrouwer and Louw, 2005). Planning using flexible models and methods forms the framework for sustainable urban development (Ahmadi & Toghyani, 2011). Adams & Watkins, (2014) suggest that spatial planning should deviate from traditional land use zoning to become more visionary, integrative, inclusive and action-orientated. Eisner et.al (1993) in agreement with other authors identified the objectives of controlling growth.

Eisner et.al (1993) states that zoning can come in different types towards managing urban growth. These include down zoning, up-zoning, moratoriums, building quotas etc. Down zoning is intended to reduce the holding capacity of an area either in terms of the number of residences or the land available for expansion. The objectives are to reduce the pace of growth to a level consistent with the ability to absorb new people and businesses. While in contrast, up zoning is intended to increase the ultimate holding capacity of an area and can serve to attract development that might have occurred elsewhere, for example, up-zoning central places can help reduce growth pressures on undeveloped lands. Moratoriums, are

intended to prevent further development for a relatively brief time to allow for the completion of plans and implementation of controls directed toward managing and accommodating growth. Building quotas limit the number of housing units that can be built during a given period towards reducing pressures on facilities and services.

These techniques ensure that the city's total population do not exceed a stipulated amount determined by the city's ability to provide services and facilities for safety, function and wellbeing of dwellers etc. Other techniques included land banking, development rights transfer, timing and sequencing control and development agreements.

### **6.1.3 Development Control and Mechanisms**

Section 91 of the Urban and Regional Planning Decree, of 1992, defines development “as the carrying out of any building, engineering or other operations in, on, over, or under any land, or the making of any environmentally significant change in the use of any land or demolition of buildings, including the felling of trees and placing of free standing erections used for the display of advertisements on the land.”

Development control is a tool for city management (Aluko, 2011); it protects the land from being misused and abused through its ability to direct change using set parameters to achieve pre-determined goals (Imimole, 2005). Empowered by laws and policies, the planning authorities guide the development within their jurisdiction as indicated in the plan. This, while ensuring orderliness and good city image, reduces ecological footprints to tolerable levels.

Control is enforced on any activity that qualifies as development as provided by the law irrespective of scope, from big projects such as an international airport to cutting down or replanting a tree (Keeble, 1983). Development control is thus the tool used to implement plans while preventing unsustainable land use (Aluko, 2011). It regulates the aspects of physical development which cannot be provided in the plans (Keeble, 1964). These includes details of designs and standards for external appearance and function (Keeble, 1983). Development control operates at the macro and micro levels to achieve order, functionality, convenience and aesthetics. These levels control the sub-division of land and development of the individual plot and structure respectively. In other words, development control is vital to morphology as developments at these two levels are the building blocks of the urban structure and form. All land within a city is subdivided into districts or zones of land uses specified for each area including conditions for height, bulk etc. Other forms of development control



include the segregation of noxious activities from residential areas, lighting, ventilation, open spaces, parking etc. To ensure success, regulatory instruments need to be supported by effective enforcement procedures (Adams & Watkins, 2014).

While development control is crucial in achieving meaningful development, it meets with resistance in many societies. Guidelines and regulations are deliberately or selfishly ignored and violated to achieve personal goals and desires (Agamah, 2008, Keeble, 1983). This is the case in Lagos metropolis, where there is poor control of development due to a lack of effective enforcement and clear-cut jurisdiction for the various agencies responsible for the built environment. The functions of the different agencies set up by the government overlap. The local authorities are not fully empowered with the necessary resources to enforce compliance. (Aluko, 2011) blames the problems of urban decay, slums, disappearing open spaces and haphazard development in Nigeria on illegal structures that spring up arbitrarily without approved layouts; visible proof of control failure.

Keeble, (1983) recommends that development control and planning theory should inform plans to translate to development; time, money and effort are required to differentiate between the desirable and the practicable. Control mechanisms examines development proposals for compliance and or propose possible amendments to accommodate projects that, due to substantive circumstances (the economy, governance, etc.) were not considered or incorporated. At the end of the day, development control should be based on rationality and objectivity.

Control mechanisms are regulatory instruments that control, manage or prohibit certain activities or aspects of development. While common throughout the world, regulation of development takes different forms, they vary with development and institutional circumstances in which such regulation takes place (Adams & Watkins, 2014).

Town planning policies are not only tools to objectively design and regulate the form and function of spatial structures; they also control activities within these structures and human settlements in general (Njoh, 2009). Their efficiency and potency depend on who is responsible for implementation. Success is dependent on understanding the parameters and uniqueness of the places being planned.

Town planning policy is a potent tool that can achieve the policies or parameters that are built into it. For the colonial masters, it was a tool to assert power and superiority, yielding sectoral development and fragmented urban spaces (Njoh, 2009). Unfortunately, post-independence planning has not been able to reverse these ills (Biao, 2013). Van Assche (2013), described

colonial development in Africa as a mismatch and considers the American approach as having the potential to structure growth in more sustainable ways. This implies that implementation, rather than planning, is the problem. Settlements (1999) reports that enforcement of planning regulations in many cities in Africa is hampered by inadequate human resources, while Biao (2013) notes that post-independent Africa inherited very few people who were knowledgeable in modern town planning and management skills. Further obstacles outlined by Settlements, (1999) include amongst others:

1. Colonialization
2. Inappropriate institutional structures and instruments;
3. Inability to design strategies to achieve sustainable urban development.
4. Disjointed planning institutions with overlapping functions.
5. Outdated planning regulation
6. Ineffective, underpowered local government and
7. Dominant central government.

By its nature, planning law is complex; it should balance the many competing interests of stakeholders seeking to maximize their own opportunities. One could also argue that there is little capacity - technical or political - to implement planning law in most countries and that the quality of the law itself could be questioned (Berrisford, 2011). Numerous scholars maintain that colonial policies still dominate and guide development in Africa, either indirectly or directly (Rogerson, 2004; Wynberg, 2007; Sirayi, 2008; Njoh, 2009; Todes, 2010; Odendaal, 2012; Todes, 2012; Van Assche, 2013; Yeboah, 2013; Plessis, 2014; Weiss, 2014). Njoh, (2009) refers to these policies as tools of power and social control over Africa. The public interest and inclusive stakeholder participation are required for effective urban development (Todes, 2010; Van Assche, 2013). Urban regimes that do not recognise this need are likely to reproduce the socio-economic inequalities and fragmented urban socio-spatial forms that have persisted in African countries (Goven, 2012).

#### **6.1.4 Provision for Development Control and Jurisdiction**

Section 27 (sub section 1) of Decree 88, 1992 provides for the establishment of a development control department at all levels of physical planning operations i.e., at the Federal, State and Local Government levels. It also stipulates that the control department shall be a multi-disciplinary one, charged with responsibility for matters concerning the control of development while implementing development plans.

The control department at the federal, state and local levels has power over all development within their jurisdiction respectively; however, the federal and state levels play supervisory roles to the state and local levels respectively, (Section 27 sub sections 2, 3, and 4).

Section 28 states that “An approval of the relevant development control department shall be required for any land development”. A developer is required to submit a development plan for the approval of the control department. Any developer that fails to produce an approved plan, or carries out an unauthorized development or an approved development that does not comply with the development permit issued by the control department, is issued a stop work order requiring the developer to suspend further development pending the service of an enforcement notice. The control department has the power to serve a demolition notice if a structure erected by a developer is found to be defective to pose danger or constitute a nuisance to the occupier and the public. Others include:

- An inventory of special buildings for architectural or historical conservation.
- The power to revoke acquired occupancy and the payment of compensation.
- The following developments are strictly prohibited except with the express permission of the Federal Ministry of Housing and Environment. Development means any physical alteration on or within the housing unit or any part of the premises within the estate and includes:
  - Construction of additional rooms
  - Fencing, Covering of a courtyard
  - Construction of motor garages or workshops for servicing of vehicles or machineries
  - Erection and/or display of advertisement signs, boards or handbills
  - Change of premises for non-residential use

### **6.1.5 Geographic Information Systems (GIS)**

Urban planning and administration require reliable information to assess the consequences of urbanization. This enhances planning for sustainable megacities (Griffiths et al. 2009; Vermeiren et al., 2012). GIS is a potential tool to improve the information available for decision making as its methods are sensitive to land use configuration and site-specific attributes (Banai & Rapino, 2009). It offers multi-analytical opportunities that allow for predictive modelling and visualisation. Innovations in GIS are a driving force in the recent development of models of urban form and function. This has facilitated site-level, “high-

resolution” spatial analysis (Landis & Zhang 1998). GIS has therefore assisted the spatial analysis of urban form. While the development of a common multi-purpose digital map and GIS for a city is costly, administratively complicated and difficult, it offers many advantages. GIS can link data sets, and facilitate inter-departmental information sharing and communication, thus enhancing productivity. Government can collect and store a substantial volume of geographically referenced data for urban planning with this facility (Adamu et al. 2014).

#### **6.1.6 Land use decision and modelling**

The dynamism of land use and the need to measure impacts, predict for future patterns and consequences has called for more proactive planning strategies. Scholars have shown optimism on the ability of models to express the relation that exists between land uses or predict possible relationships, (Zhang 2002; Barredo 2003; 2004; Waddell, 2007; Zhang 2009; 2011). Modelling is used in various aspects of urban planning, transportation, housing and development. They vary in approach and methodologies as may be relevant to the aspects of the land use under investigation, planned or forecasted. This also determines their complexity, required data, expertise, scope/scale, and time. Majority of models are quantitative in approach using simple statistics or carefully formulated formula to explain spatial patterns, predict future change, growth and land use. The model is the unifying system for all factors that influence the use of land; this helps for informed choices and decision. Lowry, (1964) used models to illustrate spatial interaction and urban land-use transport founded on Gravity theory from Newton’s Law. Echenique used the spatial model to estimate the effects of transportation on location choices to determine how land use and economic activities induce travel demand. Waddell, (2002) used Urbanism to simulate land use; housing, transportation, open spaces, the economy and the environment at different scales; parcel level to the metropolis. The cellular automation (CA) model is a simulation model, simulates various types of land use changes over time. Some of these models did not provide for qualitative decision-making variables hence deficient and the argument of Krier, (1991) that land use decisions cannot be reduced to formulaic expression is appropriate. Variables such as households and employments’ behaviour, economic and policy changes are crucial for planning. There are specialized functions for land use and so no one is perfectly able to represent urban land use hence the need for other comprehensive simplified integrated process model that considers spatial patterns and process of achieving sustainable forms.

## 6.2 Urban Management and Governance

Urban planning and growth management requires laws and methods that coordinate all aspects of the environment to achieve the harmonious goal of sustainability. These includes development plans, development control (restrictive agreements, subdivision and zoning regulations) consideration for carrying capacities, flexible fee systems and other planning and management techniques.

Urban Management enhance place value and supports growth (Adams & Watkins, 2014). While it has the capacity to solve problems, it is a plan-oriented administrative procedure rather than an interventionist or problem-solving activity. This enables solutions to be proposed for anticipated problems before they occur. (Wong et al. 2011) highlight the impact of urban morphology on the environment and energy consumption and recommend effective urban management to resolve such issues. Rakodi, (1997) also proposed improved urban management to solve problems relating to urban growth and its implications. This implies that effective urban management could control if not avoid such problems.

Urban management is a broader approach to planning that incorporates other aspects of policy and governance of spatial and land use planning (Rakodi, 1997). It is a comprehensive strategy that governs all aspects of the environment and urban living; its vastness requires inter/intra agency collaboration to achieve order and the indices of sustainability (Ahmadi & Toghyani, 2011). It is more effective than the procedural or master planning approach in planning and managing cities (Hallab, 2007). Effective urban management requires competence and integrated approaches of planning and development with consideration for specific roles of an urban management system and mechanisms for decision-making and coordination. Administrative arrangements ensure that the tasks of policy formulation, general operations and implementation are carried out efficiently.

Planning backed by laws and policies basically works within political settings; therefore, urban reform depends on a political process (Fernandes, 2003). The principles of good urban governance are applicable to sustainable cities (World Bank, 2000; Rakodi, 2003). Spatial planning is one of the five fundamental principles of good governance (Ahmadi, 2011); hence, good governance is a prerequisite for sustainable physical forms. Good governance includes competent, efficient administration and a legitimate and democratically elected government. One of the issues relating to planning which is not place specific is the unwillingness to accept recommendations from planning professionals, as politicians have interests in controlling urban planning (Adams & Watkins, 2014). Fourchard, (2012) argues

that biased politics have influenced planning in the Lagos metropolis since the end of colonialism; hence, its uncontrolled urban form that lacks the basic attributes of a modern city. Rakodi, (2003) pg.526 identifies the challenges confronting the public sector in terms of urban governance and management, which persist today. They include ineffective:

- Political systems,
- Decision-making processes,
- Accountability,
- Inter/ intra institutional roles allocation
- Deployment of monetary resources for urban development.

The Nigerian environment is a typical case due to changing administrations, the colonial legacy, military disruptions and the recent democracy. In the current democratic dispensation, decision-making remains firmly in the hands of leaders and a small elite.

Doan & Oduro, (2012) and the UNCHS (1999) note that Africa is yet to achieve sustainable environments. Traditional approaches to urban management in Africa, including Nigeria, were misinterpreted and hence did not yield the expected outcomes (Rakodi, 1997; Ogu, 1999).

While the deficiencies of urban management in African cities are the result of their colonial past, the recent democratic structures and administration are either oblivious of how to combat them or are unwilling to do so (Adebayo, 2002). The enormous problems of development are further compounded by sectoral governments, which lack proper coordinating mechanisms at all levels of urban governance and development, creating fragmented development. Structural reforms are required if urban planning is to achieve sustainable development. Fundamental change is called for at all levels of society, especially in the three tiers of government (Ahmadi & Toghyani, 2011). Urban management should be implemented by the Local government which is closest to the actors in the city building process. Adams & Watkins, (2014) recommend that policy-makers should focus on adding value to development activity, economically as well as socially and environmentally.

### **6.3 Conclusion**

Urban planning is an effective tool to achieving sustainable places, it coordinates the spatial and built environment towards ensuring an organised, safe, beautiful and functional environment even with limited resources. It is a comprehensive approach that involves planning for the present and consideration for the future while relying on past information

and data as baseline for projections. Urban planning has several methodologies and tools and can only be effective when backed up by enabling laws and regulations. These involves urban conservation, preservation, growth control and management, sprawl containment and more. It scrutinizes proposals for development in line with the objectives of development plans.

Inventions and new technology of software such as Geographic information systems, the cellular automation (CA) model and other visual and simulation models has enabled advanced planning practices and spatial modelling. These has enabled more research towards solving more technical problems in real time and accurately.

Urban planning has problems and challenges such as poorly established mechanisms, laws and regulations. These are more complex when there are no good urban management systems, good governance or democratic system. This chapter is summarised based on theory and technique, he next chapter discussed more on urban planning regulations and challenges in Africa, Nigeria and Lagos respectively

## CHAPTER SEVEN

### URBAN PLANNING AND SPATIAL FORMS IN AFRICA

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#### **7.0 Introduction**

Africa comprises 52 countries with diverse political and administrative backgrounds (Rakodi, 1997; AU et al., 2009); this further complicates the problems arising from the continent's high rates of urbanization and urban sprawl, environmental degradation, and rapidly increasing levels of poverty (Asomani-Boateng, 2011). These have significantly impacted the urban landscape, especially given the burden of poor infrastructure and housing provision by governments, (Goven et al. 2012). Africa not only hosts the fastest-growing cities in the world Asomani-Boateng, (2011); it is attracting an increasing number of transnational companies and local investment (Rakodi, 1997); hence the need to plan to accommodate such growth (Asomani-Boateng, 2011).

#### **7.1 Urban planning and changing spatial form in Africa**

The growth of indigenous African settlements was influenced by culture, markets and subsistence agriculture. The roots of cities were present in indigenous towns before the arrival of colonial administrations; thus, a form of settlement patterns existed based on culture and indigenous architecture. Cities took the form of traditional mixed-use compound houses and courtyards, achieving compactness and flexibility. They adapted to changing environmental conditions and social organization (Doan & Oduro, 2012). People lived close to their farms, workplaces and businesses as walking was the primary means of transportation (Asomani-Boateng, 2011). The planning, administration and management of these cities were communal and inclusive; grass-roots citizens and stakeholders actively participated to ensure compliance with law and order. Development control was evident in the courtyard development patterns and consideration of natural resources (Asomani-Boateng, 2011). Sprawl and urban spatial expansion were managed by means of delineated green buffers as with the garden city concept. Dominant indigenous urban forms were more circular than grid-based system. Circular layouts were designed to achieve compactness, with all the main access routes converging at the centres, where the chief's palace and the market were located. This was characteristic of the indigenous Yoruba town in West Africa, which includes Lagos Africa was colonized by the French and British at different times in their development processes. While the colonial authorities adopted significantly different approaches to urban



planning, they yielded similar landscapes of segregation and fragmentation due to the hierarchisation of ethnic groups, notions of superiority and racial differentiation (Fourchard, 2009; Njoh, 2009). Biao (2013) concludes that African cities did not fulfil the expectations of their colonial masters and do not currently serve the developmental needs of African citizens. The colonial administrations completely misconstrued indigenous systems and land use patterns, (Doan & Oduro, 2012). Western planning principles discontinued the legacies of indigenous concepts and architecture (Adebayo, 2002; Asomani-Boateng, 2011). Rather than building sustainable cities, planning policies were a tool for spatial dictatorship, social segregation and racial superiority, which translated to fragmented urban landscape, poor land utilization, and a proliferation of slums and informal settlements. The authorities seized every opportunity to display European supremacy and power (Njoh, 2009). This was evident in the social segregation that impacted on spatial forms of which the metropolitan Lagos is a good example (Coquery-Vidrovitch, 2014).

Land ownership patterns in South Africa starkly reflect the history of dispossession and segregation under colonialism and apartheid. The Whites and a few members of the Black elite had exclusive rights to property. Efforts to revoke these segregationist laws were met with resistance, (Berrisford, 2011). The authorities used legislation and unequal distribution of infrastructure to create disjointed landscapes. The exclusion in South Africa, the creation of reserved areas and construction of a railway on Lagos Island in Nigeria which strategically delineated indigenous settlements, Bigon, (2007); and the construction of buffers between the indigenous population and colonial offices and homes are all examples of the way the colonial authorities created differentiated 'dual cities' (Bigon, 2013; Njoh, 2009). Exclusive neighbourhoods were prioritized for infrastructure, open spaces, aesthetics and sanitation while the indigenous settlements gradually decayed and deteriorated into slums. This resulted in unsustainable and disproportionate spatial development in the urban landscape.

Independence from colonial rule commenced in the late 1950s through to the 1990s, with Zimbabwe, Namibia and South Africa the last to gain their freedom (AU et al. 2009). The cities built by the colonial administration were totally different from the concepts of indigenous planning and development. At the end of the colonial rule the buildings and landscapes handed down promoted different principles and values from the close knit indigenous way of living, (Biao et al. 2013). Furthermore, massive rural-urban migration led to the creation of large informal settlements at the urban fringe (Doan & Oduro, 2012).

Urban population growth accompanied by escalating problems of pollution, resource depletion, failing infrastructure and capacities brought about several challenges for which the

continent was ill prepared. All these and many more are reflected in the spatial fabric of the cities.

Post-colonial urban planning was based on long-term large-scale Comprehensive master planning which was a colonial planning model and probably more effective for slow growth centres. This was not suitable for the fast-growing African cities especially with the rapid urbanization and growth that ensued after independence.

The decline of housing provision across Africa especially for the urban poor had spatial and social implications; countries such as Zaire, Uganda, Sudan and Nigeria relied almost completely on “private construction.” (Stren 1989). A process where not necessarily large firms but individuals through self-help improvise to provide their housing and other needs. This led to unplanned and differentiated development that is difficult to harmonize into one whole. In Nigeria, the Federal Housing Authority (FHA) established to provide for housing across the country failed to deliver on the targets. The Authority established in 1973 to build low and middle-income housing in 1975 ceded to the third National Development Plan with a 200, 000 housing units’ targets. All these were short-lived white elephant projects and the privatization of development and service provision, (Hardoy & Satterthwaite 1981:180 cited in Stren 1989b, pg. 57). More recently the state of housing is at disparity with the provision of the National Housing Policy (2006) with obvious slum indicators; poor housing conditions, little or no basic services amidst poor sanitation, (Lagos Bureau of Statistics, 2013 in Oshodi et al). Also responsible is the management structure of Nigerian cities characterized by a muddled through approach where ideas are designed adopted and prematurely abandoned, (Onibokun, 1989).

Over the past two decades, African countries have adopted and formulated laws and institutions to address land systems and urban development. However, these are often not harmonised, hence serious rivalry between government hierarchies over jurisdiction. Urban planning regulations have not produced sustainable development as squatter settlements and informal development have continued to dominate urban spaces despite officially approved urban development plans, (United Nations Centre for Human Settlements, 1999). This is the result of complicated, inflexible legal and regulatory requirements which are difficult to enforce (United Nations Centre for Human Settlements, 1999). While the organisational structure might be in place, public sector agencies lack capacity to perform planning functions (Rakodi, 2003). Planning success depends on planning agencies and authorities’ capacity and the extent to which they have the necessary powers, resources and expertise

(Adams & Watkins, 2014). This explains why some cities are better planned than others are; some agencies are better prepared and empowered to do the job. Rakodi, (2003) notes that the scope of urban management extends beyond exclusive public-sector implementation. Planning is a collective effort on the part of the private and public sectors. The public sector comprises the central, states and local levels; the local governments is closest to the people and the attendant problems hence better equipped and have significant influence on spatial development, (Cities-Alliance, 2007).

While there is scarcity of comparative studies on planning policies in Africa, generalisation will be misleading as some countries are doing better than others, (Njoh, 2008; Odendaal, 2012), Planning in post-apartheid South Africa emphasizes strategic spatial planning focused on macro-level urban restructuring (Todes et al. 2010). While implementation challenges abound and the legacy of apartheid ordinances is still felt, new strategic spatial planning approaches are being put forward as alternatives to master planning (Todes et al. 2010). The (RDP) Reconstruction and Development Programme was launched in September 1994 to address the social differentiation of the apartheid dispensation, (Binns & Nel, 2002). It is a strategic policy implementable at all levels of government, focused on needs and creating liveable integrated cities. Though faced with limited funding, personnel and other challenges of implementation, it is a laudable effort of the government that needs time to prove, (Pillay, 2006). Consequent the democratic administration, the South African government adopted the target driven "integrated development planning" approach to urban planning at the local level. The IDP became the core of planning in post-apartheid South Africa; aimed to provide strategic guidance to municipalities and to coordinate sectoral plans and planning processes, (Harrison, 2001). The local level being the smallest and closest to the communities is appropriated the "developmental role as provided by the White Paper of 1998, (Harrison, 2006)

Apart from socio economic aspects of development, this policy oversees the problems of poor housing and infrastructure and the generally poor environmental conditions associated with sprawling development brought about by the apartheid systems. It is an approach that involves planning administration, advocacy and stakeholders' participation towards proffering solutions to the long-standing problems of urban development. It has clear outlines of responsibilities, terms and conditions of service delivery. The law provides for Performance Management; this as implied, is the machinery set up to measure the success of the plan; thus, creating opportunities for reviews and strategy development. This way,

implemented plans achieve the objectives and desired development impact, (Harrison, 2006). This is a laudable movement for a country that had been under the rule of the apartheid. The Nigerian government was only able to come up with a plan after 1946 in 1973 and it is not a futuristic map plan but the regulation which only bears the name of the function it hardly performs

Regarding innovations and adapting best practices in urban planning and spatial organization, South Africa is one of the leading countries in African. The country has made efforts to integrate the segregated indigenous spaces; several policies and strategies are put in place to close the gaps and build cities for the future. The corridor of freedom; a Growth Development Strategy founded on transport-orientated development is being proposed for mixed-use development with intermodal transport systems. Reducing travel distances and dependence on private car usage. This will change the settlement patterns, reducing sprawling and peripheral development which have deprived residents of economic opportunities. This project is planned to be inclusionary, bridging the gap between socio economic classes and giving everyone a right to the city. Interestingly the project is phased and provided for advocacy and public participation.

## **7.2 Urban Planning in Nigeria**

Nigeria has been ruled by various administrations adopting different systems of spatial regulation and development. Past policies and development strategies moulded the physical environment of Nigerian cities. The indigenous administration had some basic elements of planning before the arrival of the colonial masters; the form of land uses varied between cultures and localities. Land use patterns were determined by the need for defence, trade, spirituality or worship. Religious and political leaders were entrusted with the administration of community land. Settlements therefore clustered around leaders and places of worship with identifiable land administration and management even though crude.

The deliberate spatial arrangement of land uses around the palaces and seats of governments was evident in the Sokoto Caliphate, Kano and the Oyo Kingdom. Physical development was conducted in a rational manner, with consideration given to future generations, providing for inheritance, circulation, trade and communication

The pre-colonial tenure system in Nigeria was communal. Land, mutually owned under native law and custom were administered by Rulers or community heads. Right of use rested solely by being a member of the community. Aliens (customary tenants) were granted

permission to use the land under the administration of the trustees. Physical development was conducted in a rational manner, with consideration given to the future. This system protected the interests of all; young and old, dead or alive, and even the unborn (Omole, 2010; Imimole, 2005). Consideration for the unborn reveals an element of sustainability no matter how informal and unstructured. This system prohibited outright sale of land; hence, use could not be permanent. Speculation and profiteering were uncommon. However, the growth of the population and industrial development caused demand for land to outstrip supply, especially in the southern states. The traditional systems in the South failed due to the sale and fragmentation of land. Greedy trustees engaged in land speculation, disregarding customary law. The arrival of the colonial administration in the then protectorate of northern Nigeria brought about changes in land use. Land Proclamation No. 8 of 1900 was the first land legislation; it applied a uniform system of land tenure in the Northern States. This gradually changed because of colonialism, growth and urbanization, which brought about changes in land administration and development patterns.

The proclamation of Crown Lands in 1902 vested land ownership in the British monarchy. The review of the Crown Land Laws led to the enactment of the Land and Native Rights Ordinance No. 9 of 1910, which orchestrated subsequent land laws such as the Land and Native Rights Ordinance No.1 of 1916, the Land Tenure Law of 1962, and the Land Use Decree of 1978. Implicitly, the principles of urban planning and tenure systems in Nigeria have not changed much as land laws emanated from colonial legislation. Until the land tenure system is adequately dealt with, the disjointed clusters built in the Nigerian cityscape will persist, as land is not equally accessible and owned by all. By implication, the 1910 proclamation meant that the governor replaced the emirs, chiefs and elders (who administered land under the customary systems); in land matters. The governor became the supreme proprietor of land in the protectorate. This legislation was criticised for alienating indigenous people from the land and granting excess power to the governor. All approvals of both Crown and public lands were valid only with the approval of the governor and possession of a Certificate of Occupancy (C of O) without which the title to the land was lost.

The Cantonment Proclamation of 1904 provided housing, sanitation and infrastructure in reserved places for expatriates and the upper class. It created isolated Islands at the expense of public health and general wellbeing. The indigenous people were denied rights to the city, creating exclusive cities and bad city forms.

The Township Ordinance No. 29 of 1917 replicated the Cantonment Proclamation on a larger scale. The Ordinance classified urban settlements into three different hierarchies and made provision for resources allocation accordingly. Lagos was the only city grouped in the first-class category; inadvertently making the city a destination for migration. People moved from the second and third-class settlements to the Lagos city being a center for development with infrastructure. High population density, failing capacities of the infrastructure and housing shortages amongst others ensued. This further entrenched the establishment of disjointed urban islands, with some cities better developed than others. The native towns with deficient infrastructure and facilities, were not planned by the colonial authorities, they degenerated into slums and dirty, unhealthy places (Bigon, 2006).

Oyesiku, (2007) notes that Nigeria's urban landscape shows no concrete evidence of planning. The colonial administration did not incorporate urban planning into the country's constitution until 1945; afterwards, the 1946 Town and Country Planning Law was declared which was the first holistic planning law for the country. Though it was a national legislation, it was implemented sectorally by the colonial administration concentrating on the Government Reservation Areas (GRA) to the detriment of those living in native towns and as such, it did not prepare the country for modern planning schemes. The law empowered the Local Planning Authorities to carry out and implement all aspects of planning within their jurisdictions in the country. It remained in place for almost 50 years until the declaration of the Urban and Regional Planning Decree No. 88 of 1992.

The Land Tenure Law of 1962 came into operation two years after independence and was effective for 16 years. It declared all lands in northern Nigerian as native lands, thereby doing away with the concept of crown lands and public lands. It gave legal recognition to customary land held by indigenous people without the requirement of written evidence. The procedure to obtain a Certificate of occupancy (C of O) involved simply paying the administrative charges for preparing the certificate.

The Land Use Act of 1978 was an interventionist tenure system that was promulgated by the military administration to harmonise land tenure in Nigeria. Prior to this, the north and south had different tenure systems. The Act sought to recognize the rights of indigenous people while considering the growing population and urbanization which customary administration could no longer cope with. Land was made available for development to all individuals, institutions and governments. The decree vested all lands in trust to the government on behalf of all citizens.

The military administrator and local authorities administered lands through an allocation and advisory committee at the local level (Imimole, 2005). The Land Use Act in contrast to its name does not cover land use planning, it is primarily concerned with access and ownership of land within the country, (Aribigbola, 2008). While praised for guaranteeing ownership through the issue of C of O, reducing land speculation and spatial fragmentation, this Act is critiqued for poor implementation which have negative effects on spatial development. It was also criticised for not meeting up to its title aside from making land available. It failed to provide detail on planning and the use to which the acquired lands are put. The onus ultimately rests on the owners of the land to determine the use to which it is put. This lack of guidance led to an unorganised and haphazard spatial form for over a decade before the Urban and Regional Planning Decree of 1992 was passed (Omole, 2010).

The Nigerian Urban and Regional Planning Law was enacted by the military administration as Decree 88 of 1992 and was amended in 1999 with provisos for development plans, development control, urban renewal and other aspects of physical planning.

The Law made provision for the implementation of planning policy; it delegates planning roles and empowers the levels (federal, state and local) of government accordingly. The levels of government further establish agencies to implement the provisos of the law in their jurisdictions respectively, (Aribigbola, 2008). It provides these agencies are headed by qualified and professional town planners. Table 7.1 summarises the planning roles of the three level of government by the urban planning law, 1992.

**Table 7.1: Urban planning administration provided by the NURP Act No.88 of 1992**

Level of government	Responsibilities
Federal Government The commission	<ul style="list-style-type: none"> <li>• The Commission prepares the guidelines and strategies for national development</li> <li>• It also prepares standards and implement the plans.</li> <li>• The commission is responsible for research for best practices and training of planners.</li> <li>• The Commission being the central body coordinates and supervises planning activities amongst the levels of government while supporting them technically and financially.</li> <li>• Others are recommendations based on research findings, control and monitoring of ongoing projects and other roles that may be assigned it</li> </ul>
State Government The board	<ul style="list-style-type: none"> <li>• The board prepare policies and development plans within the provision of the national policy for harmony towards achieving the objectives of development.</li> </ul>

	<ul style="list-style-type: none"> <li>• It conducts research, prepare annual progress reports on plan implementation</li> <li>• It also provides technical and supervisory roles to the local levels. This involves review of annual reports by the local authorities</li> <li>• Collaboration with the federal and local governments towards plan preparation</li> </ul>
Local government  The Authority	<ul style="list-style-type: none"> <li>• The Authority is responsible for the preparation of local plans</li> <li>• Carries out development control in its area of operations under the supervision of the state board</li> <li>• The Authority is the smallest level and closest to the people and development. It is supervised and supported financially and technically by the state level.</li> </ul>

Other post-colonial intervention are the four National Development Plans; the first and second plans, 1970-1974 prioritized economic development over physical development. The third and fourth National Development Plan (1975 – 1980; 1081- 1985) were better inclined and made better provision for urban planning than the first and second NDPs. They made provision for urban development policy, infrastructure and revenue. The third NDP clearly stated the development strategy; incorporated urban-rural development, urban infrastructure, improved physical planning, structure and jurisdictions for efficient management of towns and cities, (Omole, and Akinbamijo, 2012). This plan also enabled the conception of a federal ministry responsible for housing and urban development. However, the chaotic pattern of urban development and spatial forms in the country is an indicator of the impacts and successes achieved by these plans.

Post-Colonial urban planning in Nigeria is confronted by various problems from the local to the federal level. These include weak policy and management frameworks, a lack of political will, the dearth of qualified urban planners, poor institutional frameworks, and poor plan preparation, monitoring and implementation. There is insufficient technical and political capacity to implement planning law (Berrisford, 2011). Other problems include:

- The low priority accorded to land use planning.
- A lack of national land use standards and reliance on foreign standards.
- Poor computerization of the planning system.
- A lack of public participation, engagement and enlightenment in the planning process.
- Poorly financed and equipped planning authorities.
- An inadequate institutional framework for planning.
- Poor remuneration and the poor image of planners in the public service.



### **7.2.1 Urban Planning Administration in Lagos**

The development of Lagos has been influenced by different political and planning administrations (Kadiri & Ayinde, 2010). Lagos served as the capital of Nigeria after the amalgamation in 1914 until 1990 when the capital was relocated to Abuja. Successive military administrators ruled the state as the Federal Capital Territory and State Capital. Civilian administration was in place between 1979 and 1983 and again between 1991 and 1993, after which military administration continued until the current democratic dispensation that was established in 1999 (Abiodun, 1997; Kadiri & Ayinde, 2010). All these administrations had one form of planning policy or another that have impacted the urban scape of the city.

Politics have influenced planning in the city since the end of colonialism. Since the pre-independence period, Lagos has been under the rule of the opposition party (Fourchard, 2012). In many cases, this has placed the state at a disadvantage in relation to central government in terms of resource allocation and policy making which are key development factors. Urban planning; resource allocation; facilities planning and carrying capacity are weighed using population figures and projected growth; hence the importance of accurate statistics. The controversial population figures from the 2006 census cited Lagos as the second largest city after Kano, with 9,113,605 and 9,401,288 million inhabitants, respectively. The state-conducted census of 2006 published a varied figure of 17 million unacceptable by the national government. Furthermore, the on-going controversies over local governments in the State has obvious technical consequences.

Land administration in Lagos was controlled by customary laws until the 70s; (Rakodi, 1997). Increased population brought about more demand hence the commercialization of land and housing tenure for which the customary law was insufficient. The perceived inefficiencies in land tenure and administration brought about the Land Use Act in 1978. The Act though vested the power to administer lands to the governor has not totally replaced the customary land allocation system. The Lagos state government in its bid to ensure equity and preservation of indigenous settlements excised over three hundred villages within government acquisitions, which are yet to obtain development permits and physical development plans (layouts). Most of these villages have developed into slums. There is a need to integrate these settlements with the operative development plan of Lagos to prevent them from further degenerating into mega slums in the future.

Legislative instruments have guided Town planning in Lagos from the colonial times,

initially enforcing simplistic practices of sanitation and then progressed to urban planning, administration and development control. Physical planning progressed in Nigeria with the Lagos town improvement ordinance of 1863 towards the control of development and solving the problems of sanitation. This law was preceded by the Township Ordinance No. 29 of 1917. The ordinance enabled spatial differentiation by ranking states into classes of priority and importance, hence the township improvement schemes created unequal and exclusive cities. Priority was given to the European Reservation Areas to the detriment of the native areas of Lagos Island. Planning was restricted to the residential areas of Ikoyi, Apapa, Ebute Metta, and Yaba where the colonial administrators, expatriates and executives of foreign firms lived; indigenous neighbourhoods developed haphazardly in poor conditions. These occasioned overcrowding, deterioration and consequent outbreak of bubonic plague in the late 1920s. The breakdowns necessitated the 1928 Lagos Executive Development Board (LEDB) solely responsible for urban renewal; it cleared slums and relocated families from the Island to the Mainland at Surulere, (Abiodun, 1997). Functions of the Board encompassed comprehensive land use planning, housing, development permits and prepared several schemes that determined the course and form of Lagos City, (Kadiri & Ayinde, 2010).

By 1956, the Ikeja Area Planning Authority (IAPA) was set up to control development in parts of the metropolis outside the then Federal Capital Territory. The municipality and the rest of the built-up area of Lagos including Ikeja were exclusively under the jurisdiction of the LEDB and the Planning Authority respectively. This brought about gaps and jurisdictions issues, which resulted to the need for a harmonised planning institution. Hence the Lagos State Development and Property Corporation (LSDPC), which is empowered to manage housing in the state.

Other legislative intervention in urban planning and administration in Lagos includes the Lagos State Law of Nigeria No. 42 of 1980; No. 5 of 1982, No. 6 of 1983 and the 1998 Lagos State Urban and Regional Planning Edict provided for processing applications for building plan approval, fees to be paid for all applications for approval of new developments or alteration to existing ones and development control. The laws set conditions for approval in respect of setbacks, zoning, height, the nature of the land and the need for every approved plan to bear the seal of the Ministry. It further set out guidelines for the approval of layouts.

Two edicts issued under the military administration, the Town and Country Planning Edict also known as Lagos State Edict No. 1 of 1986 and the Lagos State Law of Nigeria No. 15 of 1986 - Town and Country Planning (Building Plan) Regulations, 1986. These laws provided for all aspects of planning activities; development, control and administration. This includes

requirements for planning approvals, conditions for setbacks and density.

In 2005 a new law, the Lagos State Official Law No. 9 of 2005, was enacted for the 'Administration of Physical Planning. It provided for the creation of a ministry of physical planning and Development and Urban Renewal Authority.

The 2005 (Lagos State Official Gazette No. 24, Vol. 38 2005 was repealed for the current Lagos State Urban and Regional Planning and Development Bill, 2010). The 2010 Urban Planning Law provide for the administration of physical planning, urban development, urban regeneration and building control in Lagos state and other issues of planning through established agencies. The Lagos planning institution now known as the Ministry of Physical Planning and Urban Development harmonised all planning institutions and administration being the central planning body. It is responsible for development control, and general physical and property development within Lagos State; thus, eliminating the duplication of functions and planning bodies in the state.

Section one, Part one sets up three agencies under the Ministry of Physical Planning and Urban Development to implement the provisions of the law. These includes the Lagos State Physical Planning Permit Authority ("Planning Permit Authority"); The Lagos State Building Control Agency ("Building Control Agency"); and the Lagos State Urban Renewal Agency ("Renewal Agency"); all responsible for all Physical Planning, Urban Development, Building Control and Urban Regeneration within the jurisdiction of the state.

The Ministry under the supervision of the Commissioner initiates and formulates policies that enables implementation and enforcement of development plans. The Commissioner; sole-administrator is empowered by law to enforce the provisions of the law and in some cases, require the consent of the governor for some special projects. The ministry in collaboration with the agencies and stakeholders prepares and reviews development plans and recommendation for facilities, infrastructure and economic development.

This is achieved by coordinating the state urban development, building control and regeneration agencies while providing them technical assistance on physical planning matters. In the preparation of plans, there are inputs from all agencies and the public and stake holders before it is adopted as the operative development plan which is subject to review every five years as provided by the law. Stakeholders include ministries, agencies, non-governmental organisations, professional bodies, individuals and public. Highlighted below are the functions as provisioned by section 2 of part 1 of the Lagos State Urban Planning law, 2010

## Functions of the MPP&UD

- The ministry of physical planning manages urban development, building control and rehabilitation
- Prepares and approves development plans
- Prepare, implements and reviews urban planning policies through agencies established under the Law
- Provides technical assistance to all government ministries and agencies
- Controls infrastructure and activity location in the State;
- Others include advisory roles to the state on projects and their impacts.
- Collaborates with other institutions and levels of government on planning issues
- Perform research and Maintains a data base on all aspects of physical planning
- Recommend fees for its services;
- Execute other spatial planning duties as may be assigned by the Governor.

**Source:** Lagos State Urban and Regional Planning and Development Bill, 2010

**Table 7.2: The Lagos Planning Institutions and Structures**

Nomenclature	Year	Duration (Years)	Administration
Lagos Executive Development Board	1928-	40	Colonial
Lagos State Development Property Corporation (LSDPC)	1972	1	
Ministry of Works and Planning	1973-1978	5	
Ministry of Housing Surveys and Special Duties	1978-1979	1	
Ministry of Economic Planning and Land Matters	1979-1984	5	
Department of Lands, Housing and Development Matters	1984-1985	1	Military
Department of the Environment	1986-1986	1	
Department of the Environment and Physical Planning	1987- 1989	2	Military
Ministry of Environment and Physical Planning	1990-1991	1	
Office of Environment & Physical Planning	1992-1993	1	
Ministry of Environment and Physical Planning	1994-1999	5	
Office of Physical Planning; Ministry of Environment and Physical Planning	1999-2003	4	
Ministry of Physical Planning	2003-2004	1	
Ministry of Physical Planning & Urban Development	2004- date	11 +	

**Source:** Ministry of Physical Planning and Urban Development

Table 7.2 shows the frequent changes of nomenclature and scope of urban planning Institutions. This review of the urban planning structure in Lagos suggests poor planning and a lack of focus. The state of the environment suggests that these changes had little or no impact on urban development. The Lagos Metropolitan Master Plan aimed to guide

development of the city over a period of 20 years from 1980 to 2000 passed through eight institutions and administrations without effective implementation. The result was that the city grew amorphously without any plan for several decades, resulting in unsustainable landforms and development. Furthermore, LASURA has not achieved any Landmark success since inception in 1991, based on the meagre volume of urban renewal programmes embarked upon in proportion to the enormous environmental deterioration and growing slums in Lagos despite several restructurings (Oshodi et al 2016).

**Interpretation of Terms as Stated in Part V11 Section 102 Of the Lagos State Urban & Regional Planning and Development Law 2010.**

**"Development"** means:

- (i) the carrying out of any building, mining, or other operation in, on, over, or under any land, or
- (ii) the making of any material changes in use of any land building or structure, or
- (iii) conversion of land, building or structure from its established or approved use, or
- (iv) placement or display of urban furniture on the land, on building or structure, or
- (v) making of any environmentally significant change in use of any land and,
- (vi) **demolition of building including felling of trees;**

**"Development Plans"** - means details, drawings and specifications for a development rendered at appropriate scales, dimensions and sizes as prescribed by the Regulations made pursuant to this Law;

**Operative Development Plan"**- means any plan that has formally been endorsed for implementation;

**"Planning Permit"** - means an approval or assent given for the time being to a development and includes, layout or subdivision plan, Building Control authorizations given at construction and post construction stages;

**"Person"** means an applicant for or holder of development permit under this Law and includes for the avoidance of doubt, an owner, his servant or agent, consultants, an independent contractor or a builder or a corporate or an unincorporated body registered under the relevant Acts;

" **Agency**"- means any bodies established to perform or contribute to planning activities under this Law;

"**Rehabilitation**" - a reintegration process where specific structures are improved to meet established standards and criteria.

"**Redevelopment**" - means a planning process where an existing old and decayed settlement or neighbourhood which has been declared a blighted area is completely pulled down and redeveloped from scratch and thereby creates a new and modern development in replacement of the old one.

"**Renovation**" means to rebuild, reclaim, recondition, reconstruct, rehabilitate, reinstate, rejuvenate, restore, a building (excluding painting).

"**Special Building Project**"- includes refineries, petrochemical plants or complex storage/holding tank farms, container/bonded terminals and other developments that may be classified by the relevant agencies as special building projects;

"**Urban furniture**"- includes all those physical structures placed on the landscape and affixed to the land distinct from actual building and, includes bus stop shelter, telecommunication antennae, mast and tower, cables and pipes, street neon sign, advertisement billboards, light statue, artefact placement, fountains and, direction finders;

"**Up-Grading or "Regeneration"** - means to improve the physical conditions of an existing settlement.

"**Waste Land**" - includes land which for the time being is unworkable and includes burrow pit, land degraded by erosion, abandoned waste dumps and land liable to flooding.

### 7.3 Conclusion

Africa have not been able to build sustainable environments due to inadequate planning systems to control development; hence new frameworks are required to redesign and restructure urban places. Traditional approaches to urban development did not yield the expected outcomes and Nigeria is a case in point (Ogu, 1997; Rakodi, 1997). The trend of urban development in Africa is a consequence of deficient urban governance and inadequate understanding of the dynamics of its cities Rakodi, (1997). this is because successful urban planning is based on effective political systems grounded in strong democratic values, (Goodfellow, 2013).

At the very time that Africa was beginning to experience urbanization, colonial administrations imposed sectoral development, leaving behind a legacy of deficient urban management in African cities. Urban planning in Nigeria as reviewed is still in a stage of antithesis from achieving sustainable development. The country has developed on meagre plans and national development strategies. Until 1992, the country was built on a policy that had lost validity and relevance considering the change of administration population growth and several structuring of the levels of government. The 1992 planning law aside allocating functions to the levels of government have no explicit objectives and plans for national development. That is why it is difficult for the states and local government to adequately implement and adapt the plans and even in some instances overlap with national interest.

There are no clear policy and planning framework to undo the fragmented development enabled by the colonial laws instead the city further developed on the fragmented legacies. The urban planning laws are disjointed and unresponsive to the condition of development at all levels.

The trend of development in Nigeria and particularly the Lagos mega city shows that these legal instruments have done little or nothing to enable sustainable urban planning in the country. Instead, the traditional and colonial administrations laid the foundations for sectoral and uneven development, which the post-colonial administration is building upon.

Spatial planning in Lagos has been an intervention tool to urban deterioration rather than a deliberate action towards achieving an orderly built up city. Thus, there has been the difficult challenge to achieve harmony and continuous development. Indigenous development was based on discretion and customary values. the discriminatory policy and machinery of the colonial development built disjointed and fragmented spaces. while the post-colonial development policy is overwhelmed reacting to the inherent spatial problems and policies.

Other challenges are outlined as follows:

- Most planning laws were formulated in reaction to pressing issues and problems.
- There is little or no conscious planning for a sustainable environment.
- Little has been done to blur the footprint of segregated colonial development.
- Planning was sectoral and segregated.
- Planning was not provided for until 1945, almost a hundred years after development commenced.
- Infrastructure is not provided for and upgraded to meet up with increased demand and growth.
- Land laws and land use are not in harmony.
- There is poor implementation and, in some places,, none whatsoever.
- Planning laws did not make provision for changing city functions and growth.
- The laws were not integrated

World cities are adopting sustainable and best practices towards ameliorating the impacts of development while achieving sustainable development. The problems facing African cities are multifaceted and thus call for holistic solutions. Forward planning and realistic masterplans measured against resources, capacity building and development should be the priority for the future, (Adebayo, 2002).



## CHAPTER EIGHT

### CASE STUDY AREA

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#### **8.0 Introduction**

This chapter draws on secondary data and documentary evidence to examine the case study area, the Lagos mega city. It discusses the evolution of the city, its development patterns, growth trends and the impact of urban planning on its spatial forms.

#### **8.1 Background and National Geo-Location**

Nigeria is located between 8.0000° N and 10.0000° E and covers 923,768 km<sup>2</sup>. It is the most populous country in West Africa, with a heterogeneous population that grew from 55.7 million in 1963 to 140 million (National Population Commission, 2006). The country has experienced several geographical delineations and spatial forms through the creation of states and administrative centres. It currently comprises a Federal Capital Territory (FCT) and 36 states, of which Lagos is one (see Fig.8.1 and Fig.8.2).

According to UN HABITAT (2010, 2014), rapid urbanization and population growth in this country have led to social inequalities, land scarcity and extensive slums, as well as environmental degradation. Nigeria not only hosts some of the largest urban centres in the world, but has a concentration of cities, being home to 133 cities in 1960, 253 in 1980, and 438 in 2000, with the number expected to reach 574 by 2020 (UN HABITAT, 2010).

By the year 2000, 43.5% of the country's population lived in urban areas, with 65% projected for 2020 (Agbole & Agunbiade, 2009). Taking into account high mortality rates due to AIDS and reduced life expectancy and infant mortality, the CIA World Fact Book estimated Nigeria's population at 181,562,056 in June 2016. The United Nations World Population Prospects (2015) notes that, Nigeria's population is expected to exceed 300 million by 2050, higher than that of the United States and making it the world's third largest country, with almost all settlements urban in nature. Table 8.1 shows the demographic and spatial distribution of Nigerian states set out in the 2006 Population Census.



Fig. 8.1 Map of Africa showing Nigeria  
Source: Fourchard, 2012

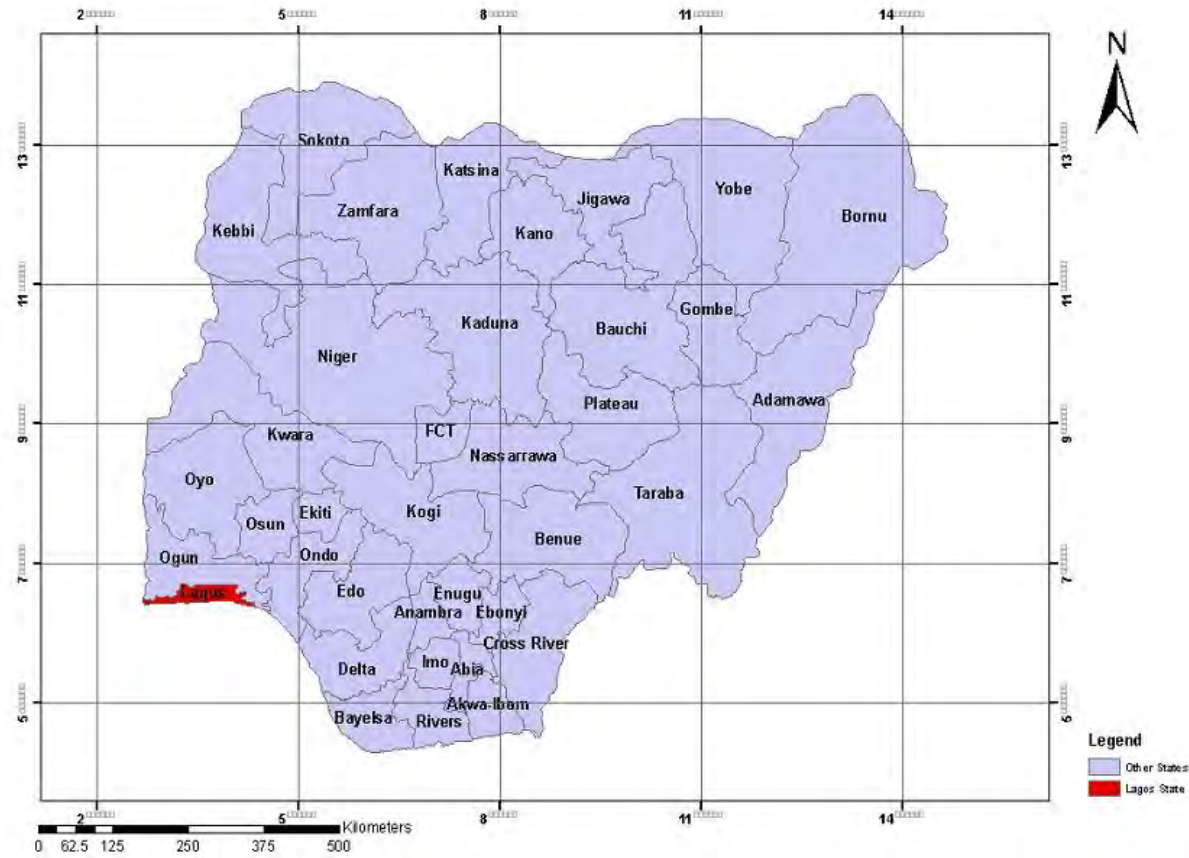


Fig. 8.2: Map of Nigeria Showing Lagos  
Source: Department of Surveying and Geo-informatics, University of Lagos

**Table 8.1: Population and Land Size of Nigerian States and the FCT**

	State	Population	Population %	Land Size Km <sup>2</sup>	Land size %	Population Density
1	Abia	2,845,380	2.03	4,902.238	0.52	580.4
2	Adamawa	3,178,950	2.30	38,823.307	4.14	81.9
3	Akwa Ibom	3,902,051	2.80	6,772.089	0.72	576.2
4	Anambra	4,177,828	3.00	4,816.214	0.51	867.5
5	Bauchi	4,653,066	3.30	49,933.873	5.33	93.2
6	Bayelsa	1,704,515	1.20	9,415.756	1.00	181.0
7	Benue	4,253,641	3.00	31,276.709	3.34	136.0
8	Borno	4,171,104	3.00	75,480.907	8.05	55.3
9	Cross River	2,892,988	2.10	21,636.596	2.31	133.7
10	Delta	4,112,445	2.93	17,239.240	1.84	238.6
11	Ebonyi	2,176,947	1.60	6,421.230	0.69	339.0
12	Edo	3,233,366	2.30	19,819.277	2.12	163.1
13	Ekiti	2,398,957	1.71	5,887.890	0.63	407.4
14	Enugu	3,267,837	2.33	7,660.166	0.82	426.6
15	Gombe	2,365,040	1.68	17,982.034	1.92	131.5
16	Imo	3,927,563	2.80	5,182.818	0.55	757.8
17	Jigawa	4,361,002	3.11	24,515.620	2.62	177.9
18	Kaduna	6,113,503	4.40	45,711.188	4.88	133.7
19	Kano	9,401,288	6.70	21,276.872	2.27	441.9
20	Katsina	5,801,584	4.13	24,971.215	2.66	232.3
21	Kebbi	3,256,541	2.32	37,727.965	4.03	86.3
22	Kogi	3,314,043	2.36	29,581.885	3.16	112.0
23	Kwara	2,365,353	1.70	34,467.536	3.68	68.6
24	Lagos	9,113,605	6.50	3,496.449	0.38	2, 607
25	Nasarawa	1,869,377	1.33	27,271.497	2.91	68.5
26	Niger	3,954,772	2.82	74,108.580	7.90	53.4
27	Ogun	3,751,140	2.70	16,980.550	1.81	220.9
28	Ondo	3,460,877	2.50	15,195.177	1.62	227.8
29	Osun	3,416,959	2.43	8,699.836	0.93	392.8
30	Oyo	5,580,894	4.00	28,245.264	3.01	197.6
31	Plateau	3,206,531	2.28	27,216.948	2.90	117.8
32	Rivers	5,198,716	3.70	10,432.281	1.11	498.3
33	Sokoto	3,702,676	2.64	33,776.886	3.60	109.6
34	Taraba	2,294,800	1.63	60,291.820	6.43	38.1
35	Yobe	2,321,339	1.70	46,909.760	5.00	49.5
36	Zamfara	3,278,873	2.33	35,170.629	3.80	93.2
37	FCT Abuja	1,406,239	1.00	7,753.853	0.83	181.4
	Nigeria	140431790	100	937052.155	100	150

Source: NPC, 2006

Figures 8.3; 8.4 and 8.5 are graphical illustrations of national population distribution, land size and the relationship with population (density) based on the 2006 census. They clearly show the hierarchy of Nigerian states with Lagos being the smallest in terms of land size.

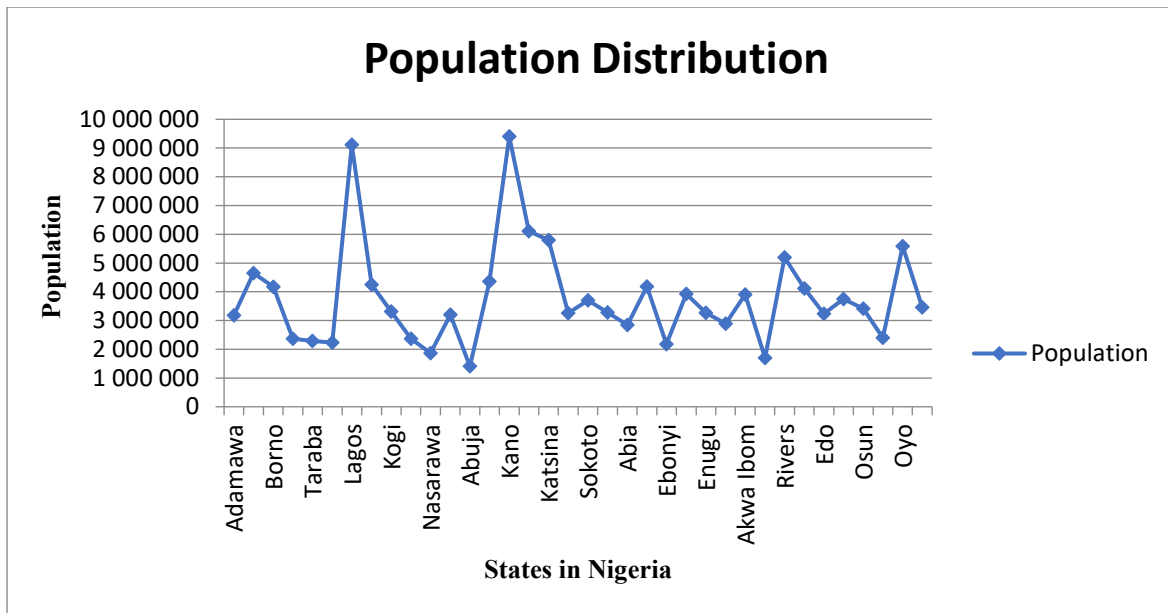


Fig. 8.3 National population distribution: an extrapolation of the 2006 NPC  
Source: Author, 2018

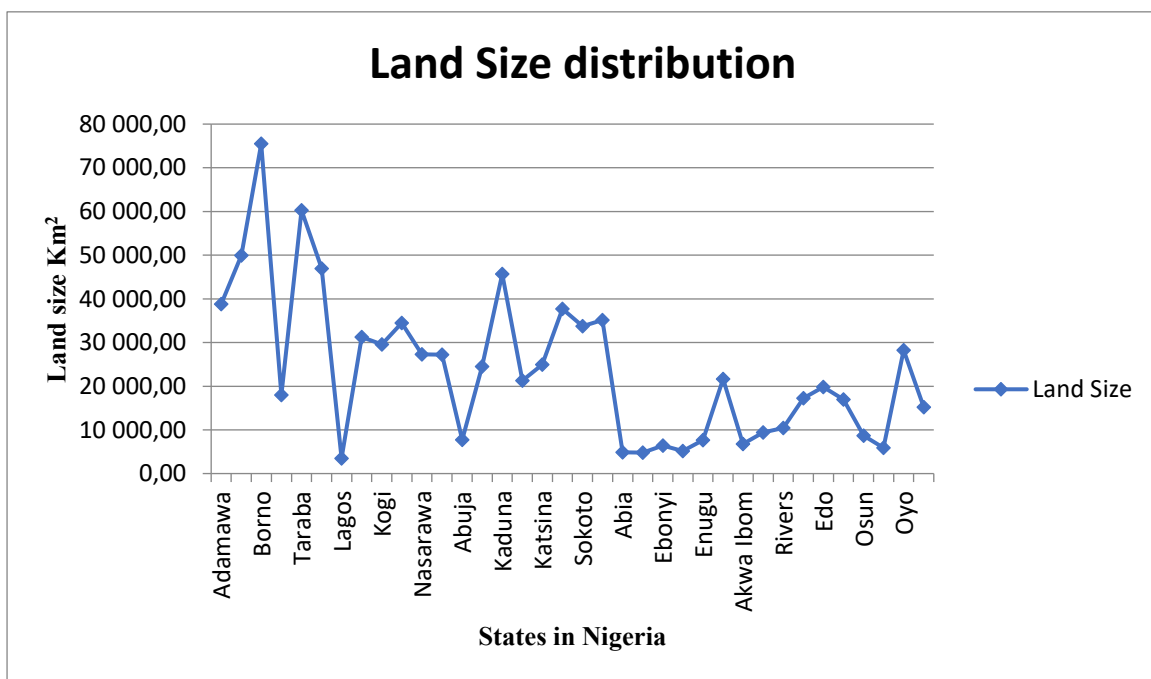


Fig. 8.4 National Land Size Distribution: an extrapolation of the 2006 NPC  
Source: Author, 2018

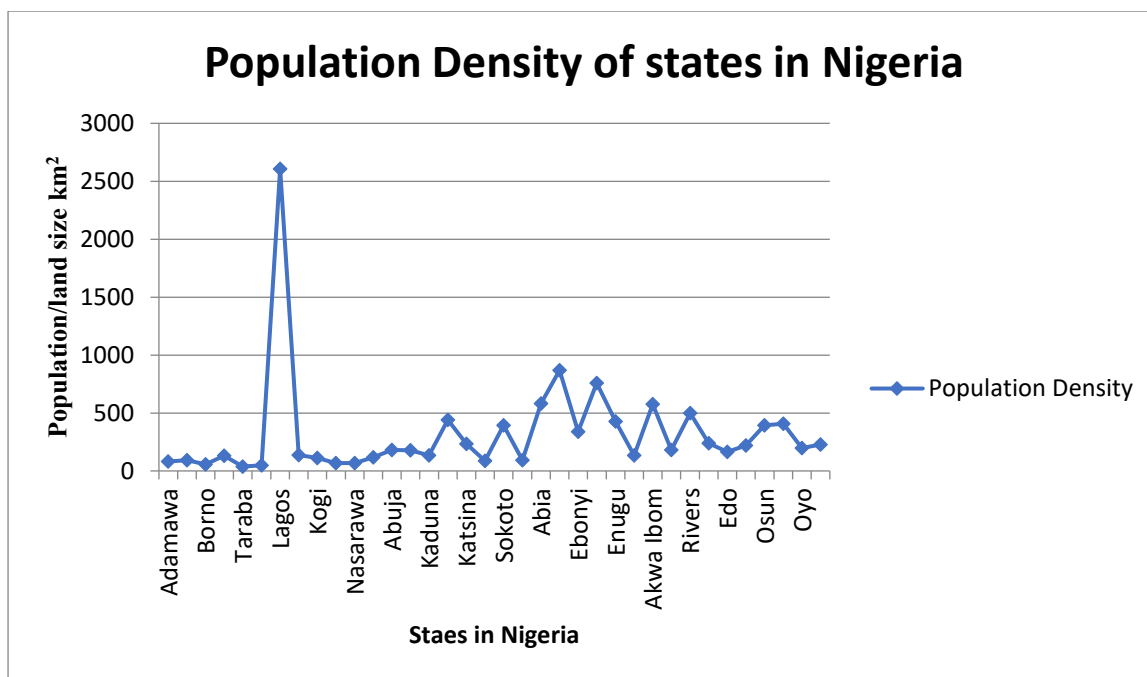


Fig. 8.5 Population Densities of States in Nigeria: an extrapolation of the 2006 NPC  
Source: Author, 2018

The previously agrarian economy now revolves around the petroleum industry that has provided about 90% of the country’s total annual export earnings since 1973; 20% of Gross Domestic Product (GDP) and more than 70% of government revenue (UNHABITAT 2010, 2014). The three-tier government system at national, state and local levels is faced with a variety of challenges. The majority of Nigeria’s urban population lives in poor and deteriorating environments. Global Urban Indicators (2009) cited in UN HABITAT (2014) notes that 64.2% of the urban population resided in slums in 2007, a slight improvement on 77% in 1990, 73% in 1995, 69% in 2000 and 65.8% in 2005. Among other factors, this is due to poor governance and bureaucratic administrative systems, complicated land tenure systems and consequent land speculation, and uneven and unplanned development. Despite the slight improvement since 1990, the fact that more than 60% of its people resides in slums calls for urgent action on the part of the government.

## 8.2 Lagos: Port City, Administrative and Economic Hub

Lagos State is situated in South-Western Nigeria between latitudes 6°22' and 6°52'N and stretches between longitudes 2°42' and 3°42'E. It is bordered by the Republic of Benin in the West and Ogun State in the Northern and Eastern parts while the Southern boundary is defined entirely by the Atlantic Ocean.

The state has an approximately 180 kilometres' shoreline along the Bight of Benin and a land area of 3,577 km<sup>2</sup> (Ogunleye & Awomosu, 2010). It is relatively flat terrain with significant areas of wetland in the form of creeks, lagoons, beaches and unclaimed mangrove swamps, etc. (see Fig. 8.6 and 8.7) (Abiodun, 1997, Kadiri & Ayinde, 2010). The lagoon has a surface area of approximately 200 km<sup>2</sup>, which makes it one of the biggest lagoons on the West African coast (Bentum, 2012). Other parts of the state are subject to seasonal flooding (Agbole & Agunbiade, 2009; Braimoh & Onishi, 2007; Iwugo et al., 2003).

Table 8.2 shows that, 21.8% of metropolitan Lagos is made up of water bodies. The case study areas comprise about 10% of the Lagos metropolis, of which 47% (162.06 km<sup>2</sup>) is occupied by water. More specifically, 13 km<sup>2</sup> of 38.5 km<sup>2</sup>, 145 km<sup>2</sup> of 299 km<sup>2</sup> and 4.06 km<sup>2</sup> of 9.26 km<sup>2</sup> of Apapa, Eti-Osa and Lagos Island local government areas are water bodies, respectively. These constitute about a third of Apapa, and half of Eti-Osa and Lagos Island either in the form of lagoons or the Atlantic Ocean. Thus, although it has the largest population in the country, Lagos city suffers a lack of land for physical development (Kadiri & Ayinde, 2010).

**Table 8.2: Land Mass/Water Area of Lagos Mega City**

Local government	Area land mass Km <sup>2</sup>	Water area in km <sup>2</sup>	Total in km <sup>2</sup>
Agege	17	-	17
Ajeromi / Ifelodun	13	0.9	13.9
Alimoso	137.8	-	137.8
Amuwo-Odofin	153	26.1	179.1
Apapa	25.5	13	38.5
Badagry	363	80	443
Epe	641	324	965
Eti-Osa	154.1	145	299.1
Ibeju-Lekki	643	10	653
Ifako/ Ijaiye	43	-	43
Ikeja	49.92	-	49.92
Ikorodu	200	145	345
Kosofe	74.4	10	84.4
Lagos/island	5.2	4.06	9.26
Lagos/mainland	19.62	-	19.62
Mushin	14.05	-	14.05
Ojo	163	19	182
Oshodi/Isolo	41.98	-	41.98
Shomolu	12.1	2.5	14.6
Surulere	27.05	-	27.05
TOTAL	2797.72	779.56	3577.28

**Source:** Lagos State Government Digest of Statistics, 2011

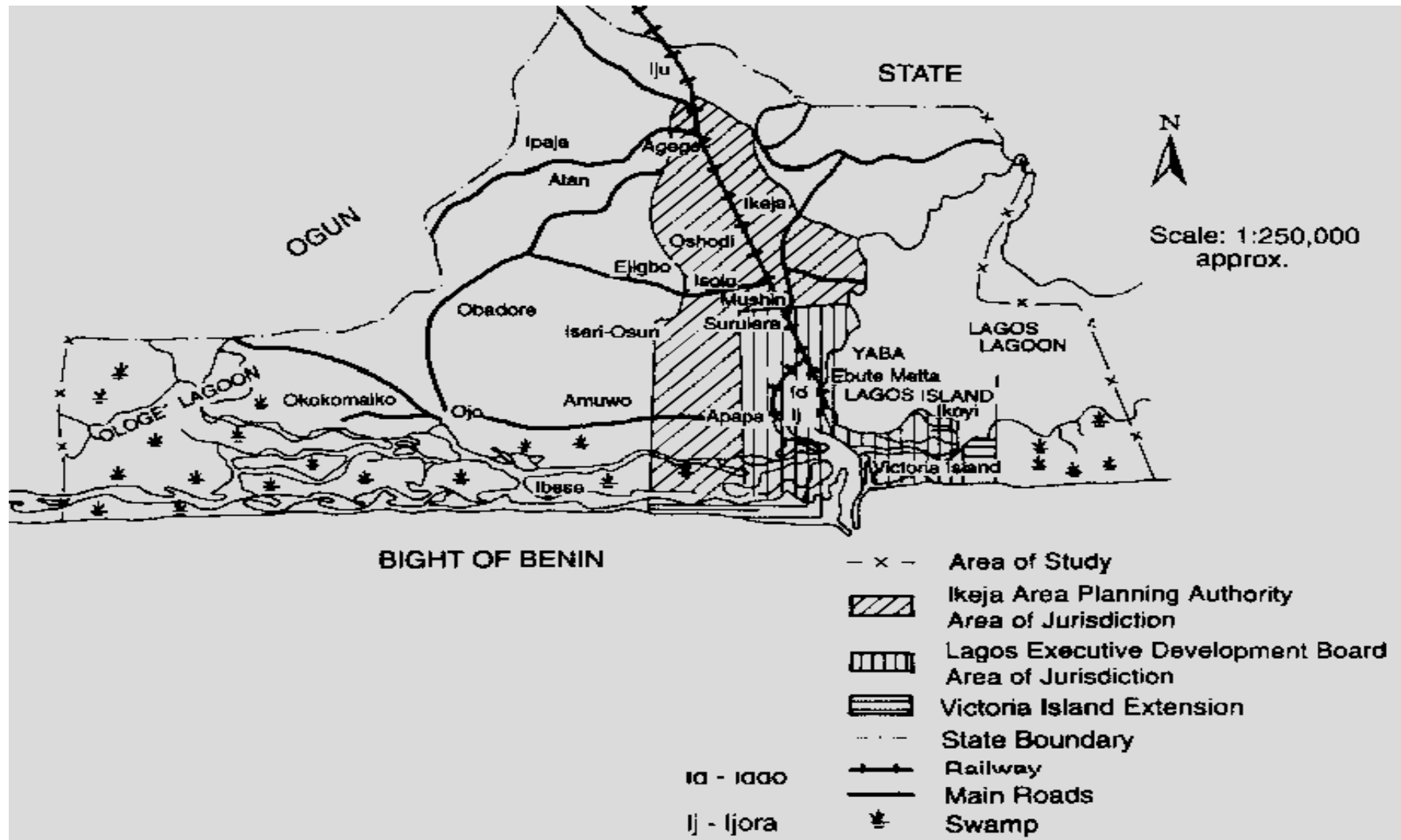


Fig.8.6: Metropolitan Lagos Showing Built up areas

Source: LSDPC in Abiodun, 1996)

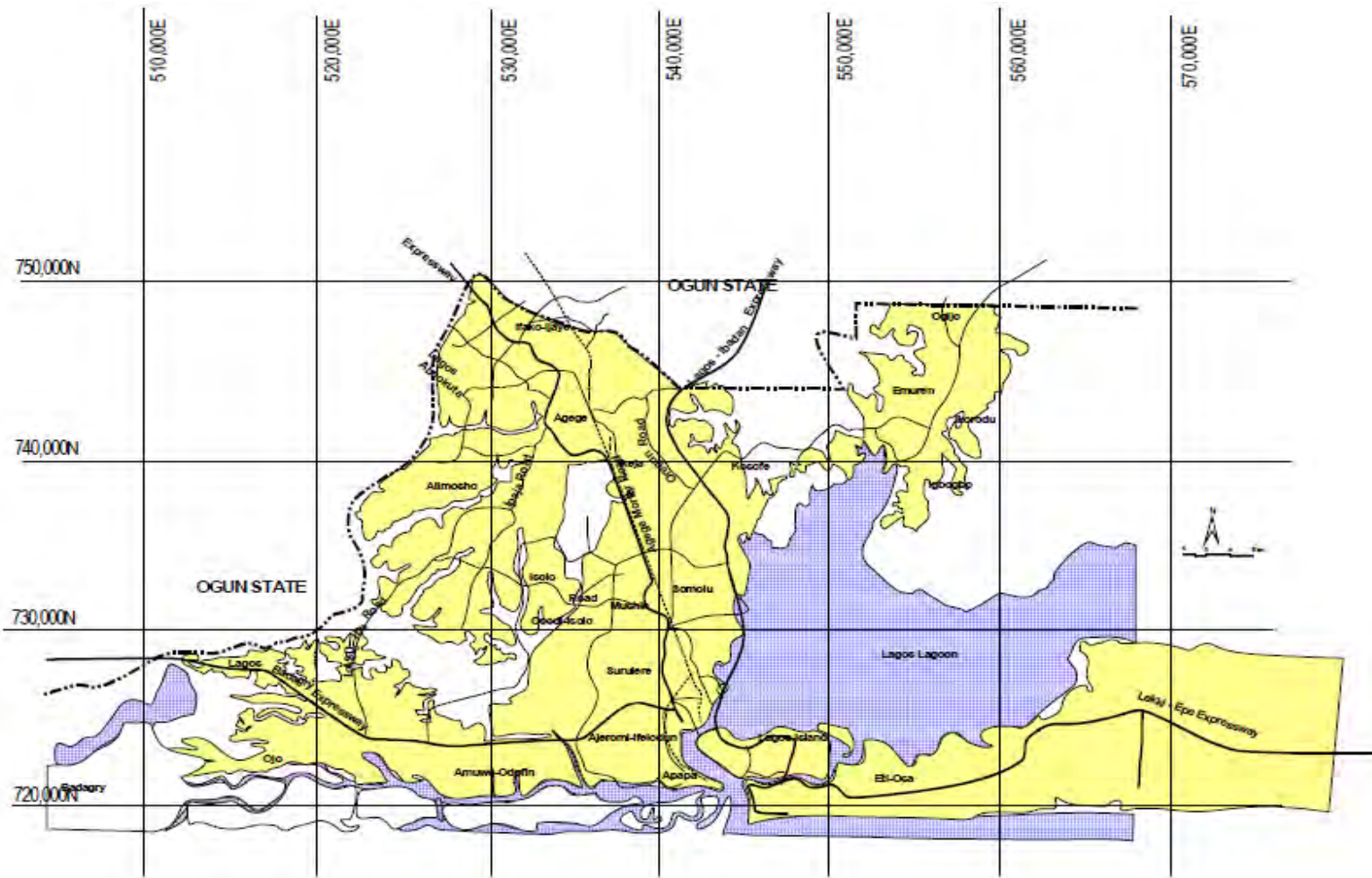


Fig. 8.7: Map of Lagos  
 Source: Department of Surveying and Geo-informatics, University of Lagos



Shaped by its socio-economic, political and administrative roles, Lagos developed into an important metropolis in the Nigerian urban system (Abiodun, 1997). It is not only the biggest city in Nigeria and Africa but ranks amongst the largest ten in the world; with an urbanization rate unparalleled by any other African state (Abiodun, 1997, Braimoh & Onishi, 2007; World Urbanization Prospects: The 2011 Revision). Due to its location and proximity to ports, transport and communication lines, it has continued to play a significant role in Nigeria's economic and political system, emerging as the major development hub in the country and the leading economy and trade destination in Africa (Ogunleye & Awomosu, 2010). The city is host to numerous federal agencies and is the largest development node for internal and external trade in Nigeria. Its seaports handle most imports and non-oil exports, generating around a quarter of Nigeria's GDP (Rice, 2012; Ogunleye & Awomosu, 2010).

Most of the country's industrial and commercial activities and foreign trade are domiciled in Lagos with the Apapa and Tin Can Island wharves facilitating import and export of raw materials and finished products for and from manufacturers within and outside the country. The concentration of activities and manufacturing and consequent infrastructural development in Lagos means, that its economic significance is unmatched by any other urban centre in Nigeria (Abiodun, 1997; Braimoh & Onishi, 2007). It is a major growth pole with a myriad pull factors, and a centre of employment and excellence that contributes 32% of national GDP (Cities Alliance 2012). The city has sustained its lead as a national and international innovation centre even though the federal capital moved to Abuja city in 1990 (Abiodun, 1997; Adetokunbo, 2010; Kadiri & Ayinde, 2010).

Commenting on the relationship between this metropolis and the country as a whole, a former military governor of Lagos (Rasaki, 1988) said: "Nigeria is recognized as the giant of Africa. Lagos is the heart and soul of that Giant, when Lagos sneezes, it means Nigeria has a cold, when it reverberates in violent demonstration, it means that the peace and security of the Nigerian nation is threatened".

### **8.2.1 Historical background; Morphology and Development of Lagos Mega City**

Lagos city grew out of a small nucleus of fishing and farming settlements (Lagos Island) in the seventeenth century to become the most important megalopolitan city in West Africa in terms of income generation and circulation of people, goods and services. Sequential developments resulted in a dramatic rise in land values, spatial expansion and competition for

space (Fourchard, 2012; Bigon, 2007).

Lagos Island has a unique morphology of natural lowlands surrounded by water bodies. Due to its topography, it is delineated into two main regions, namely, Lagos Island, and the Lagos Mainland (Brammoh & Onishi, 2007). Pre-colonial Lagos occupied less than a third of five-sq. km. The Island was surrounded by a thick belt of mangrove forest along its shores and its interior mainly comprised swamps, creeks and dry land (Bigon, 2005). Fig. 8.8 show sparse development, pockets of swamps and undeveloped land. Plate 8.1 shows Lagos Island in 1929 with largely undeveloped swamps and vegetated lands and the adjoining islands.

The north-western extreme was the first settlement of the founding fathers in the eighteenth century and later became the first settlement (the Isale-Eko quarter) of the indigenous population; the centre of a new prosperous village inhabited by fishermen, farmers, and local chiefs and the Oba's (king) palace.



Fig. 8.8: Pre-Colonial Lagos  
Source: Aderibigbe 1975 (in (Udo, 1978))



Plate 8.1: Old Lagos 1929

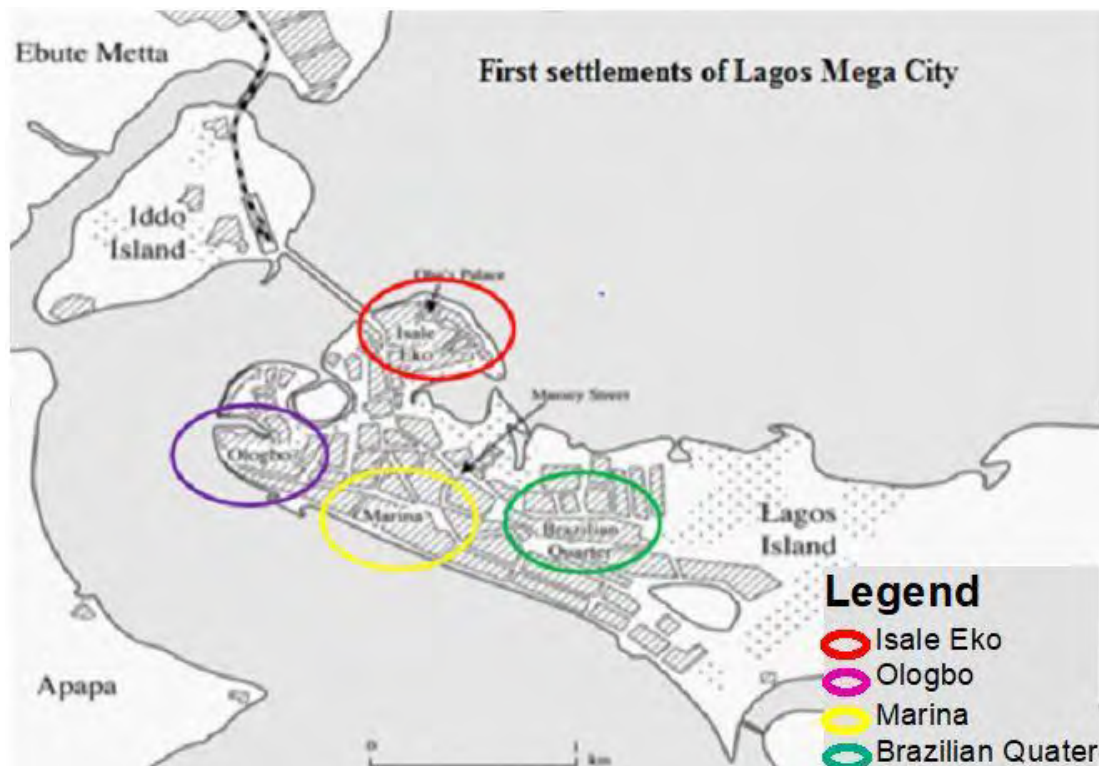
**Source:** <http://www.nairaland.com/865653/old-lagos-pictures/3> accessed Saturday 3rd September 2016

Lagos served as the capital and seat of administration after the amalgamation of the former colonial administrations and was also the Federal Capital of Nigeria from 1914 to 1991. It has remained relevant in all administrations (1920 to 1960) and military and civilian regimes (1966 to 2008) (Fourchard, 2012). Other factors that contributed to the growth of the city were the construction, in 1865, of the railway linking the city (Island), the port and the hinterland; the development of the Lagos harbour in 1908 and 1917; and its status as the joint termini of major land, sea and air routes (George, 2007 in Kadiri & Ayinde, 2010). Today, the city of Lagos boasts a concentration of capital assets, trade, public investment and leading institutions. Koolhaas & Cleijne (2002) described this mega city as hybrid, self-organizing urbanism. It is both a port city and the hub of Nigeria's external trade.

The city was a primary city that was built on cultural and customary civilization. Before the colonial era, development started in clusters around leadership and trade. For the Island, the point of reference and the growth pole was the unending water bodies, which attracted Neolithic development. Farmers and fishermen settled, developed and grew. The informal

development took irregular, unorganized spatial forms.

Customary communal land tenure was partly responsible for the way in which the metropolis developed (Bigon, 2006). The Oba (King) held the land in trust and allocated land to foreigners and repatriates who wished to settle in Lagos (Bigon, 2006). Land allocation was based on culture, social origin and status. This enabled the various ethnic groups on the Island to live in separate quarters, which made segregated planning easy and laid the foundation for the landforms that followed. Lagos was divided into four quarters with different landscapes, which were the result of segregated building codes and infrastructure provision by the colonial administration (Bigon, 2006). These communities comprised Isale-Eko, the Saro quarter, the Brazilian quarter and the Marina indicated by the red, purple, yellow and green rings in Fig 8.9. They hosted indigenes, a heterogeneous European community, and freed slaves and migrants from Sierra Leone and Brazil, respectively. Isale-Eko rapidly became overcrowded, in contrast to the quarters, especially the European residential quarters along the Marina where most residents could afford permanent, imported, building materials in line with the European style (Bigon, 2007). This deterioration was exacerbated by the British regime that did not treat the expatriate and indigenous communities the same.

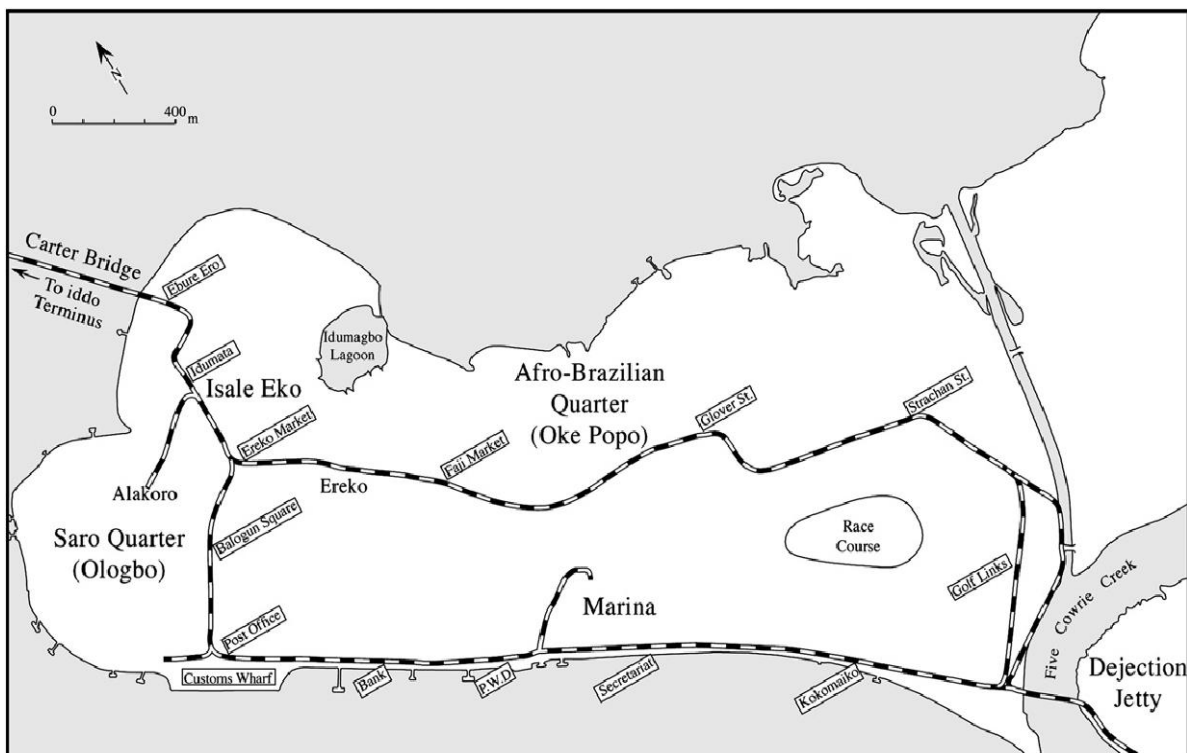


**Fig. 8.9:** First Settlements of Lagos Mega City  
**Source:** Mabogunje, 1968 (in Bigon, 2006, pg. 293)



Unequal sectoral development and infrastructure provision helped consolidate the morphological partitions that prevailed on the Island from the mid-nineteenth century (Bigon, 2006). The Saro quarter was home to merchants; hence the concentration of commercial development and warehouses along the Marina. The Brazilian community was mainly involved in crafts and introduced Brazilian architectural styles throughout the city (Fourchard, 2012).

These four communities contributed to Lagos' physical and conceptual crystallization. The privileged white residential area was developed at the expense of the residential quarters of the urban majority. Fig. 8.10 shows the southern area and parts of the Afro-Brazilian and Saro quarters, while Plate 8.2 demonstrates the conspicuous spatial hierarchy evident in colonial development where infrastructure was used to delimit the boundaries of development between Lagos' quarters. The picture shows the northern and southern part of Lagos distinguished by building styles and materials. The colonial administration proved somewhat inefficient in enforcing the relevant laws, especially in ameliorating the conditions and physical environment of the northern parts of Lagos where the indigenous population lived.



**Fig. 8.10:** Map of the Four Settlement Quarters in Lagos Island

**Source:** Based on N.S. Miller, Lagos Steam Tramway, 1902-1933 (in Bigon, 2007, 293)



**Plate 8.2:** Sectoral Development on Massey Street, Lagos Island

**Source:** Bigon, 2006

Lagos is described as one of Africa's most dysfunctional cities with undefined boundaries that continuously swallow smaller cities (Rice, 2012). In different interviews, Koolhaas (2001, pg. 515; 2002, pg. 516) described it as an intense city with a poor environment, not based on any single homogenous model, unique in its class, a point where everything enters as well as exits. He added that cities should be a constellation of different models, noting that they are changing as old models become redundant. He observed that, while planning is in place, much development lacks any planning, creating a mix of legal and illegal developments. This is responsible for the strong contrasts in the city that are hard to find in the western world. Lagos is growing so fast that if nothing is done to organize the chaotic development, the spectre exists of a city of 24 million people without a concept or plan. The colonial administration shaped town planning policies, architecture and urban management in the capital city (Fourchard, 2012). Planning issues have been evident since the 19<sup>th</sup> century, when Lagos was described as a cosmopolitan and disorderly city.

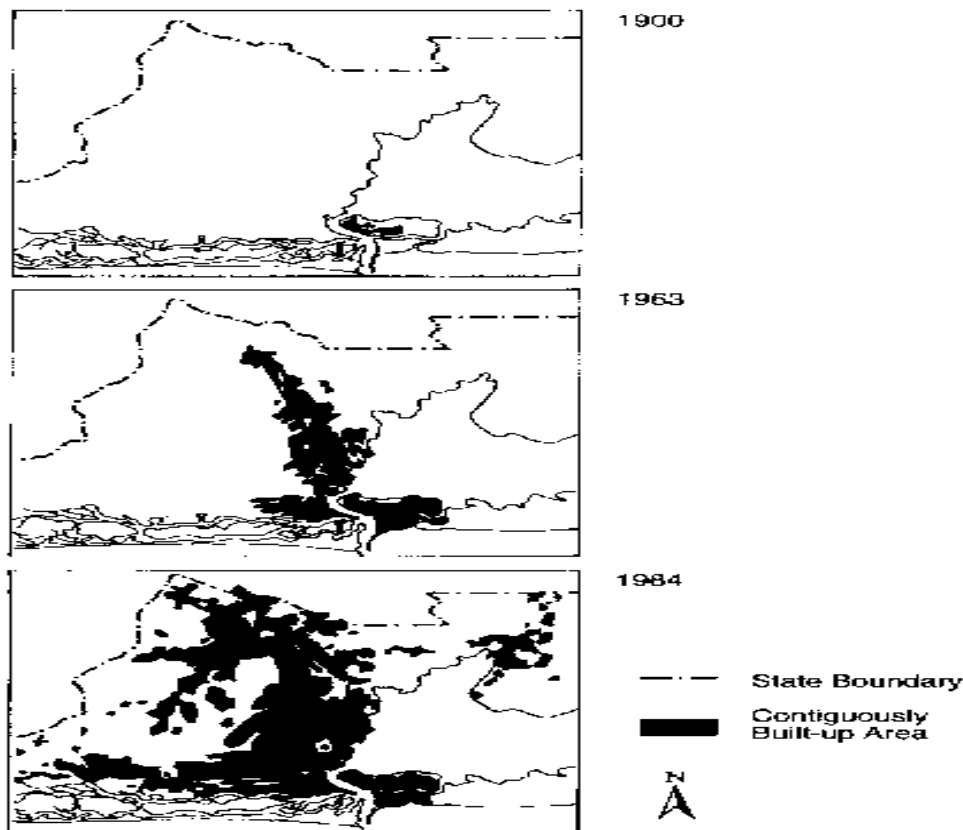
## 8.2.2 Urbanization and Demographic Growth Patterns

Lagos is a highly heterogeneous city that is home to the descendants of pre-and post-colonial immigrant settlers that have fused with the indigenous population (Olaseni, 2010); hence its eclectic character, with increasing social stratification and contrasting lifestyles (Fourchard, 2012). Table 8.3 shows that Lagos' population grew rapidly over the years from a mere 25,000 occupying 3.97km<sup>2</sup> in 1866, to 5,685,781 in 1991. Growth began to double in 1950 with spatial expansion into neighbouring towns and villages. Swamps were reclaimed to accommodate the growing population and metropolitan Lagos was widened to include the neighbouring territories of Ebute Metta and Iddo Island offshore (Bigon, 2007). This is evident in Fig. 8.11 that shows rapid growth between 1900, 1963 and 1984.

**Table 8.3: Population Growth and Aerial Extent (1911-2006)**

Year of Census	Area km <sup>2</sup>	Total Population
1866	3.97	25,083
1871	3.97	28,518
1881	3.97	37,452
1891	3.97	32,508
1901	3.97	41,847
1911	46.08	73,766
1921	51.64	99,690
1931	65.51	126,108
1950	69.68	230,256
1952	69.95	341,569
1963	-	1,136,154
1965	112.70	-
1976	271.20	3,519,000
1985	347.47	5,801,000
1991	-	5,685,781

**Source:** Adapted from Abiodun (1997, 1); George (2009; 3 cited in Kadiri & Ayinde, 2010, 226); UN Habitat Based on projected 6.0% growth rate for Metropolitan Lagos



**Fig. 8.11:** Map of Lagos showing continuously built up area  
**Source:** Abiodun, 1997

The NPC (2006) ranked Lagos as the second most populated state after Kano with a population of 9,113,605 and 9,401,288, respectively. The metropolitan area comprises 80%, with 16 of the 20 LGAs outlined in Table 8.4 and more than 8 million people. It includes residential, industrial, commercial and port districts, with Eti Osa, Ikeja, Lagos Island and Apapa local government being the most prominent. These local governments are host to the residential neighbourhoods of Victoria Island, Industries, Apapa Port and the Lagos Island CBD, amongst others.

The Lagos mega city is overwhelmingly urban and dense and consists of continuously built up and outlying suburban areas. Although it has the smallest land size, it is the second largest and most populated city, hosting over 6% of the total national population, with a population density of 2,607 persons per km<sup>2</sup> (see Table 8.4). The population is not evenly distributed. Figs. 8.12; 8.13 and 8.14 show the population and land size distribution of the LGAs of the state. The city has a population density of about 2,600 persons per km<sup>2</sup>, with some LGAs having more than 55,000 persons per km<sup>2</sup>. This density is not expressed in compact development but in congestion and overcrowded situations.

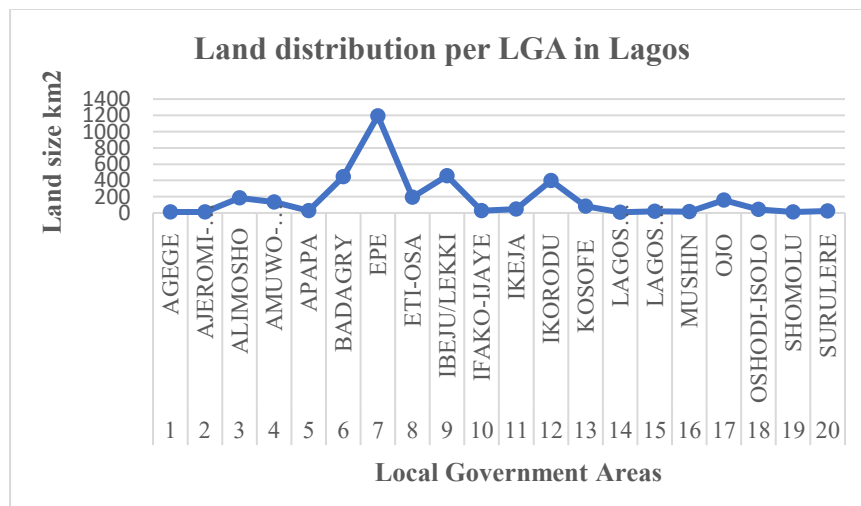


**Table 8.4: Population of the state and land size per Local area**

S/No.	Local Government Area	2006 NPC Population	2006 Lagos State Population	Land Size Klm2	Population Density (Inhabitant/Km <sup>2</sup> )
1	Agege	461,743	1,033,064	11.3	40,871
2	Ajeromi-Ifelodun	687,316	1,435,295	12.4	55,429
3	Alimosho	1,319,571	2,047,026	186	7,094
4	Amuwo-Odofin	328,975	524,971	135	2,437
5	Apapa	222,986	522,384	26.8	8,320
6	Badagry	237,731	380,420	443	536
7	Epe	181,734	323,634	1,194	152
8	Eti-Osa	283,791	983,515	193	1,470
9	Ibeju/Lekki	117,793	99,540	458	257
10	Ifako-Ijaye	427,737	744,323	27	15,842
11	Ikeja	317,614	648,720	46	6,905
12	Ikorodu	527,917	689,045	396.5	1,331
13	Kosofe	682,772	934,614	81.9	8,337
14	Lagos Island	212,700	859,849	8.7	24,448
15	Lagos Mainland	326,700	629,469	19.5	16,754
16	Mushin	631,857	1,321,517	17.5	35,106
17	Ojo	609,173	941,523	158.8	3,836
18	Oshodi-Isolo	629,061	1,134,548	45	13,979
19	Shomolu	403,569	1,025,123	11.6	34,790
20	Surulere	502,865	1,274,362	23	21,864
Lagos State		9,113,605	<b>17,552,942</b>	3,496.449	2,607

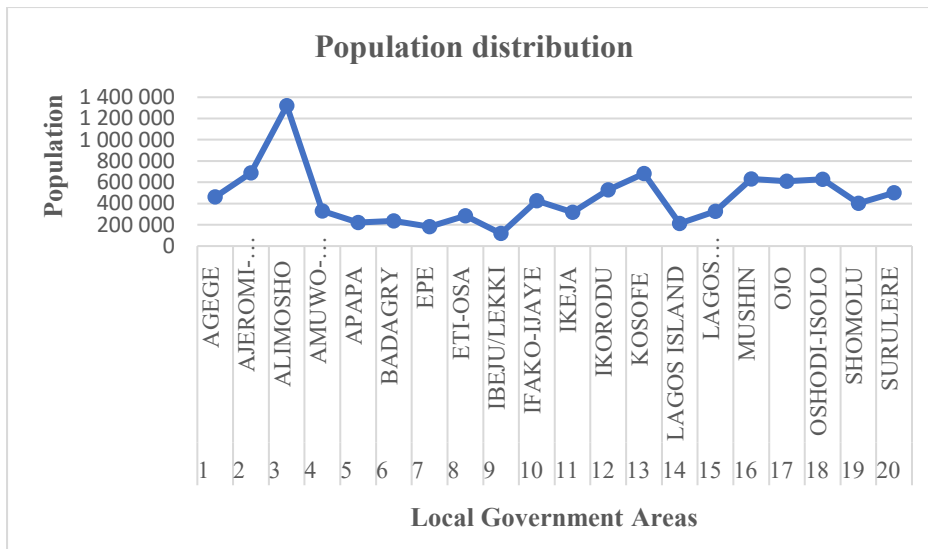
Source: NPC, Lagos State, 2006

The outer cities tend to have greater densities due to the failing residential function of the inner city, leading to sprawling development and congested inner cities. It is therefore evident that inner city residential land is under-utilized. The case study areas could accommodate more people by increasing densities and making provision for carrying capacity.

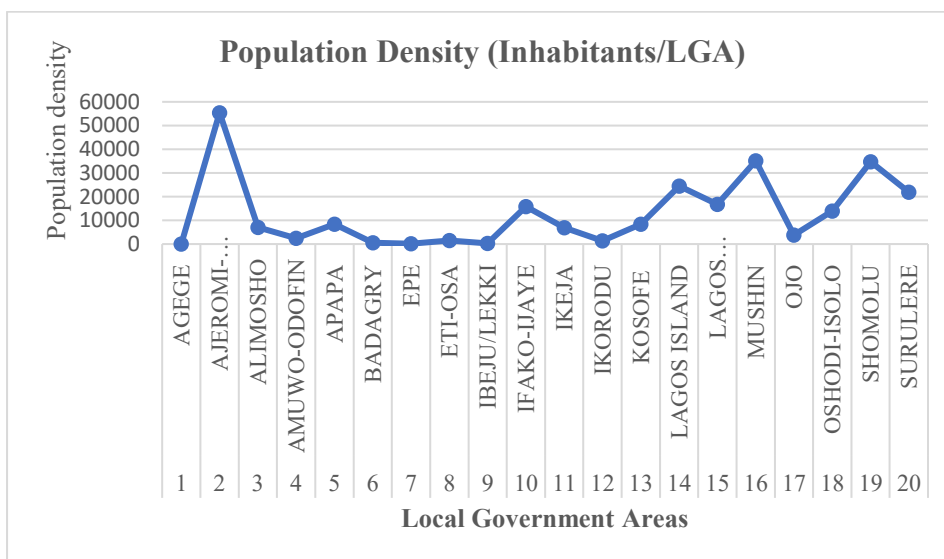


**Fig. 8.12: Land distribution per Local Government Areas in Lagos based on the 2006 census**

Source: Extrapolated by Author 2018



**Fig. 8.12:** Population distribution of Local Government Areas in Lagos based on the 2006 census  
**Source:** Extrapolated by Author 2018



**Fig. 8.13:** Population Density of Local Government Areas in Lagos State based on the 2006 census  
**Source:** Extrapolated by Author 2018

The urbanized character of Lagos State is illustrated by the fact that less than 5% of its total population lives in what could be termed rural communities, far exceeding the national rate of 36.28% and 63.72% for urban and rural areas, respectively (Olaseni, 2010). Table 8.5 shows relative growth trends and resultant population density at the national and state levels. Lagos had a population density of 1,600.54 people per square kilometre in 1991, rising to 2,519.58

in 2006 (Lagos State Government Digest of Statistics, 2011). This is far higher than the national population densities of 96.34 and 151.56 persons per square kilometres in 1991 and 2006, respectively. Population growth translates to increased demand for housing and business locations which far exceeds supply. Such demands have profound environmental implications. The United Nations estimated that Lagos would be the third largest city in the world by 2015 with a projected population of 25 million (Kadiri & Ayinde, 2010). Based on predictions that the Lagos metropolitan area will continue to experience rapid population growth and increased economic activities, there is a need for effective planning to ensure sustainable development.

**Table 8.5: Demographic Analysis of Lagos (1991-2006)**

Indicators	Nigeria	Lagos State	Lagos State %
Area (Km <sup>2</sup> )	923,768	3,577	0.40
Population (1991)	88,992,220	5,725,116	6.40
Population Density in 1991 (per km <sup>2</sup> )	96.34	1,600.54	-
Population (2006) *	140, 431,790	9,113,605	6.44
Population Density, 2006 (person km <sup>2</sup> )	151.56	2,519.58	-
Mean Household Income in 1996/97 (N)	5,149.80	7,524.30	-
% Rural Population in 1991	63.72%	6.31%	
% Urban Population in 1991	36.28%	93.69%	
% Rural Population in 2000	63.72	5.0%	
% Urban Population in 2000	36.28	95.0%	

**Sources:** NPC, 2006; Lagos State Government Digest of Statistics, 2011

### 8.2.3 Land Use Allocation in Lagos

Table 8.6 shows the land use structure for 1976 and proposed budget for the year 2000. This budget made provision for urban and non-urban land use categories. Urban land use increased from 17,228 ha in 1979 to 63110 ha in 2000. A comparison of the two plans shows that more land area was provided for residential land, from 8,936 ha in 1976 to 46,830 ha in 2000. However, the proportion of residential to other land uses decreased from 51.9% to 35.8% in 2000. This resulted in higher population density that will exert pressure on facilities and upward trends in the cost of land and housing as demand will exceed supply.

**Table 8.6: Land use structure of 1976 and budget for year 2000**

Land Use Category	Land Area Occupied(Ha) 1976	% of Gross Plan Area 1976	Land Area Occupied (Ha) Yr. 2000	% Gross Area Year 2000
Residential	8939	51.9	46830	35.8
Industrial Estates	1444	8.4	5200	4.0
Commercial Business	821	4.8	1200	0.9
Institutional & Special Uses	2366	13.7	3280	2.5
Transport	3205	18.6	6600	5.1
Open spaces	453	2.6	-	-
Non-urban	-	-	67590	51.7
Total	17228	100.00	130700	100

Source: Lagos Metropolitan Master Plan (1985) Vol.1 Pg.106 and Vol.11, Pg. 429, 1985 in Olaseni, 2010

### 8.2.4 Inner City Housing and Urban Land Forms

Housing is one of the fundamental pillars of sustainable development (Ahmadi & Toghyani, 2011). Urban places, especially in the developing world, face critical challenges, one of the most pressing of which is high demand for housing (Adetokunbo, 2010; Olayiwola et al., 2006). This is because housing provision has failed to keep pace with the growth of the urban population, creating a wide margin between demand and supply (Olayiwola et al., 2006). It has led to a proliferation of suburbs (Adetokunbo, 2010), illegal development and widespread illicit settlements (Fernandes, 2003). Oshodi et al. (2016) observe that government's inability to provide adequate housing for the growing population led to the evolution and proliferation of slums and informal settlements in Lagos.

Kolawole (2013) cites the Managing Director of the Federal Mortgage Bank of Nigeria (FMBN) on the acute lack of home ownership in Nigeria. The country lags in provision of public housing and basic housing funding facilities. This has resulted in a lack of adequate housing for the urban population. The relationship between home ownership, housing characteristics and income is directly proportional due to its capital-intensive nature. This implies that the higher income population is more likely to own homes than those in the low-income groups. The latter live in unhealthy, poorly equipped housing under barely liveable conditions. The minimum wage of #18,000 is within the range of 120-45 dollars (4-1.5 dollars a day) in recent times due to the declining economy and the value of the Naira falling against the Dollar. The increased cost of living and high inflation results in abject poverty and extreme living conditions for low-income earners. They lack access to mortgage facilities and cannot afford rent, let alone own land and material to build their own homes.

With a home ownership rate of about 25% and a population of well over 140 million, the housing supply gap between low and middle-income groups in this rapidly urbanizing country is huge. The problem is exacerbated by the fact that housing finance and mortgages are not readily available to low-income groups and the informal sector to which most Nigerians belong. This is due to the lack of a robust mortgage financing system (Kolawole, 2013). The CBN Banking Supervision Annual Report (2008) notes the dominance of commercial assets over mortgage assets, an indication that primary mortgage institutions do not prioritize housing finance. Indeed, 90% of housing developments in Nigeria are self-financed through personal savings for periods upwards of 10 years. Most homeowners save part of their earnings and gradually build on their land. This accounts for the incremental development patterns in Lagos. The MD of the FMBN cited by Kolawole notes that the World Bank predicts that the housing problem in Nigeria will become even more acute, resulting in a housing crisis by 2020 if adequate measures are not taken.

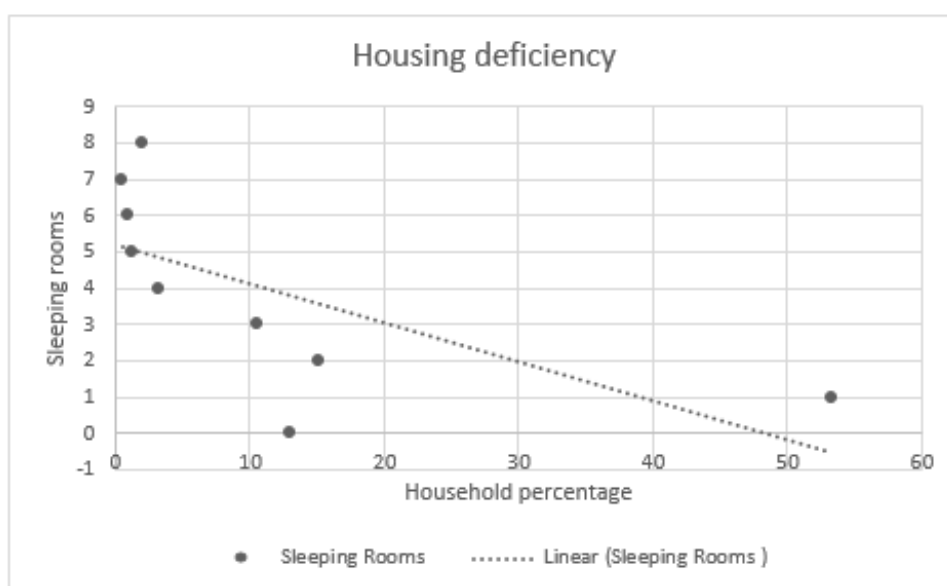
Lagos city remains one of the most attractive cities in Nigeria due to the socio-economic opportunities it offers. Large numbers of people move from the hinterland (rural-urban migration) and the city is also a magnet for international migrants (Landau & Segatti, 2009). Socio-economic change and human mobility are interactive processes (Castles, 2009); hence the influx of migrants from different socio-economic classes is not without its own dynamics. Inability to afford housing and rent leads to spatial marginalization, with the poor living far from employment opportunities and access to public facilities. Informal squatter settlements are mushrooming on the outskirts of the great cities, limiting the scope for sustainable urban planning (Gilbert & Crankshaw, 1999). Okesoto et al. (2013) report that most of the Lagos population resides in the suburbs and peri-urban areas due to the lack of adequate inner-city housing, resulting in outward growth of the city as illustrated by the concentric model.

Table 8.7 sets out the housing status in the Lagos metropolis, based on the 2006 census and Fig. 8.15 sets out the housing deficit. Of 2,195,842 regular households, 284,666 (13%) are practically homeless as they have no sleeping space. These households inhabit shacks and makeshift houses. Furthermore, 1,169,737 (53.2%) and 333,087 (15%) households live in one and two rooms, respectively. Thus, a total of 81.2% of regular households in Lagos live in unfavourable conditions. Less than 20% of the population has decent accommodation. This has a huge footprint on space.

**Table 8.7: Housing status in Lagos metropolis**

	Households	% Households	Sleeping Rooms
	284,666	13	0
	1,169,737	53.3	1
	333,087	15.2	2
	233,725	10.6	3
	71,840	3.2	4
	28,128	1.2	5
	21,751	1	6
	10,132	0.5	7
	42,776	2.0	8
Total	2,195,842	100	-

Source: Author’s creation from 2006 NPC census



**Fig. 8.14: Housing Deficit in Lagos State**

Source: Author’s creation from NPC 2006

Poor planning for housing, infrastructure and services resulted in inadequate housing and services, as well as urban decay. Lagos State has a housing deficit of over five million yet lacks an appropriate strategy to ameliorate the problem. There has been a decline in the budgetary allocation for housing from 4.05% of the total budget in 2000, to 1.42% in 2005, rising marginally to 2.7% in 2010 (Lagos State Ministry of Housing, 2010). Residential land use in the inner city is not protected and, in most cases, has succumbed to the forces of bid rent, invasion and succession as in the case of Victoria Island. More than 90% of housing in Lagos is in the form of self-help housing. People buy untitled land from the “Omo-Onile”

(indigenous owners) build houses, and construct roads and other basic facilities, often in contravention of development plans. This results in irregular development patterns (Oshodi, 2010). The urban renewal and regeneration program and establishment of new towns are designed to address this situation. In 1980, the Lagos State Government established the New Towns Development Authority (NTDA) that provided site and service schemes for individual middle-income housing. These present opportunities for critical approaches to sustainable development, policy formulation on inclusive housing and urban revitalization.

### **8.3 Conclusion**

Lagos city's vantage point, location and resultant vivacious business environment earned it its status in the national economy, therefore attracting population growth and spatial development which is unfortunately not effectively planned and managed, resulting in poor spatial organization and failing carrying capacity.

Poor housing delivery also led to residents seeking alternatives in the form of spontaneous squatter developments. The planning laws were not focused on sustainable development. Development control was too basic and lacked specific objectives and planning policies and regulations were generalist in approach and lacked target driven approaches to sustainability.

## CHAPTER NINE

### LAND USE MAPPING AND MORPHOLOGICAL ASSESSMENT

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#### **9.0 Introduction**

This chapter discusses the findings on urban development and spatial patterns. Temporal remote images show the path of spatial growth and the amount of land used for urban development over a period of 30 years.

Morphological analysis was conducted on the building blocks and at street level using photographs and figure ground maps. Base maps were digitized to generate thematic map layers using qualitative field survey data. The analysis shows land utilization and the impact of development control in metropolitan Lagos. The condition of the buildings and general environmental attributes were measured using a variety of quality indicators (Uwadiogwu, 2013). Land utilization and the attributes of a good city were assessed based on a simple scoring system. A total of 2,543 buildings were surveyed, 1,004, 897 and 642 in Apapa, Lagos and Victoria Islands, respectively. The maps presented are derived from data collected from base maps and field surveys conducted in selected parts of the study area, Apapa, Lagos Island and Victoria Island using the attributes inputted to the database of the maps in the GIS. Environmental quality and attributes were analysed using the score matrix that was analysed statistically.

#### **9.1 Land use and Spatial Expansion of the Lagos Metropolitan City**

The maps/images have a pixel resolution of 30m, hence ( $30 \times 30 \text{m} = 0.0009 \text{ km}^2$ ). To determine the extent of growth, the pixel values were converted into spatial terms as seen in the table. The table shows that over a period of 30 years, a total of  $700 \text{ km}^2$  growth was recorded in the study area.

The results in Tables 9.1 and 9.2 illustrated by Fig.9.1 show temporal spatial development from 1985 to 2015. Metropolitan Lagos grew from  $399.4 \text{ km}^2$  in 1986, to  $605 \text{ km}^2$  in 2000 and  $923.2 \text{ km}^2$  in 2015. The area increased by 8.97%, 13.58% and 20.73% in 1986, 2000 and 2015, respectively. This implies that the metropolitan area more than doubled its size over a period of 30 years. It increased by 51% between 1986 and 2000, and approximately 53% in 2015. This was a response to rapid population growth and was hence not adequately planned.



**Table 9.1: Growth patterns and spatial expansion, 1986-2015 (30 years)**

Class Name	1986		2000		2015	
	Pixel Count	Percent Cover (%)	Pixel Count	Percent Cover (%)	Pixel Count	Percent Cover (%)
Metropolitan	443843	8.97	672303	13.58	1025808	20.73
Vegetation	3219092	65.04	3781347	76.40	3436486	69.43
Water	471723	9.53	495907	10.02	487263	9.84
No data/Cloud	814899	16.46	n/a	n/a	n/a	n/a
Total	4949557	100	4949557	100	4949557	100
	1986 (%)	2000(%)	2015(%)	Average Changes (%)		
Metropolitan	8.97	13.58	20.73	14.43		
Vegetation	65.04	76.40	69.43	70.28861371		
Water	9.53	10.02	9.84	9.798136143		
No data/Cloud	16.46					

Source: Author, 2018

**Table 9.2: Spatial growth from 1986-2015**

Class Name	1986		2000		1986-2000	2015		2000-2015
	Pixel Count	Land size km <sup>2</sup>	Pixel Count	Land size km <sup>2</sup>	Growth km <sup>2</sup>	Pixel Count	Land size km <sup>2</sup>	Growth km <sup>2</sup>
Metropolitan	443843	399.458	672303	605.0	205.6	1025808	923.2	318.2
Vegetation	3219092	2,897.18	3781347	3,403.2	506	3436486	3,092.8	-310.4
Water	471723	424.550	495907	446.3	22.8	487263	438.5	-7.5
No data/Cloud	814899	733.4	-	-	-	-	-	733.4
Total	4949557		4949557	4,454.5	734.4			733.4

Source: Author, 2018

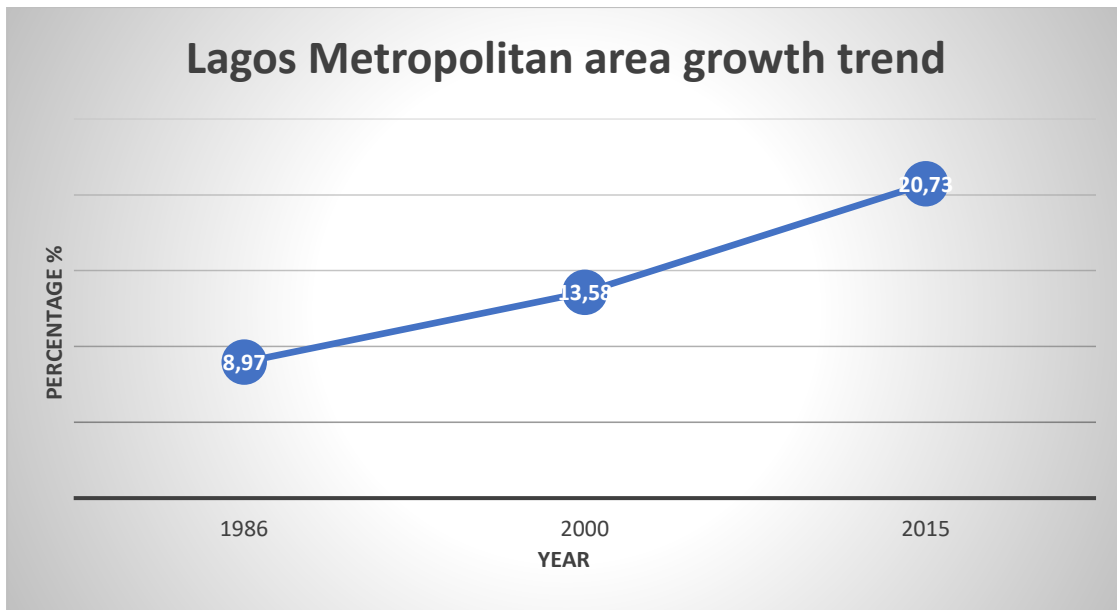


Fig. 9.1: Growth trends in Lagos city  
Source: Author, 2018

The growth of the study area is shown in Figs. 9.2-9.4. The red represents the metropolitan area. It shows the trends in spatial growth and development and the changing morphology.

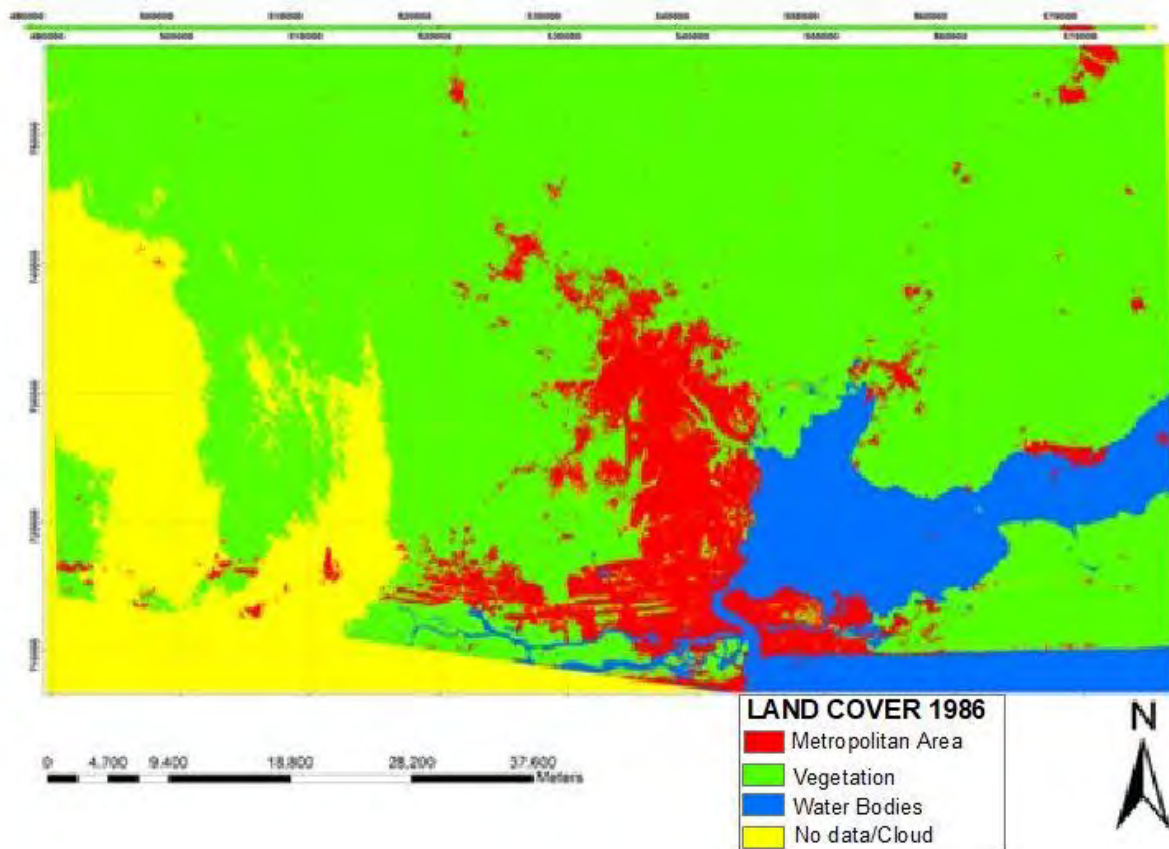
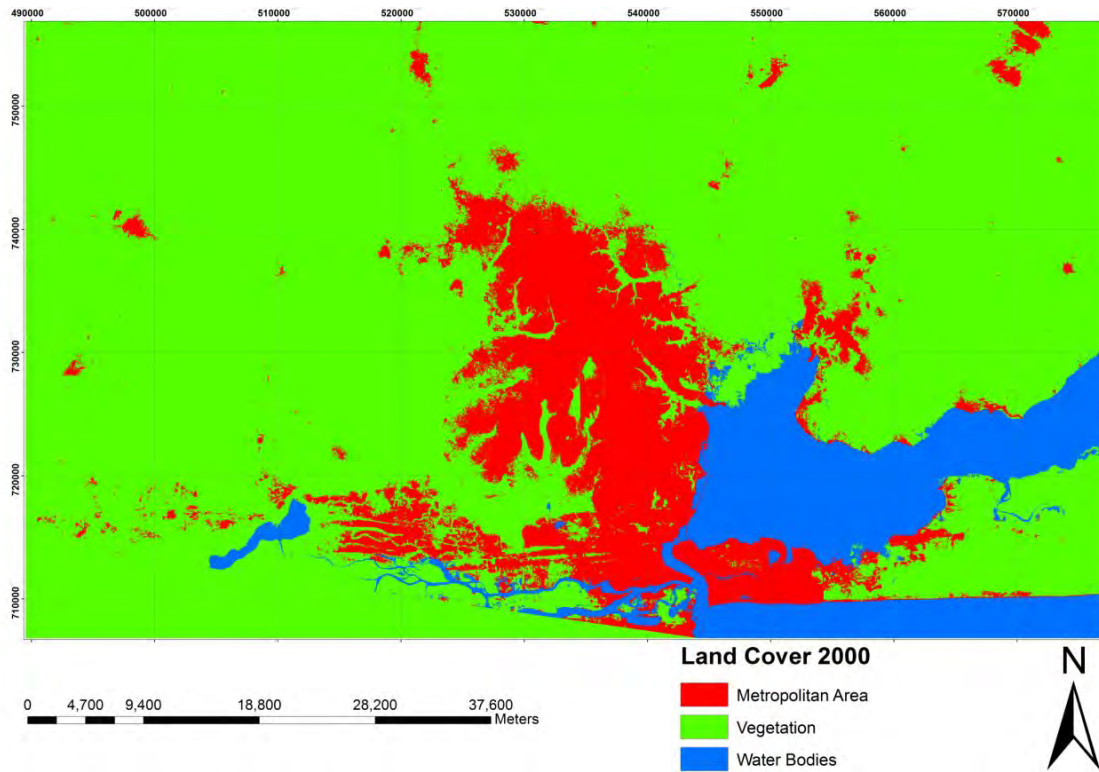
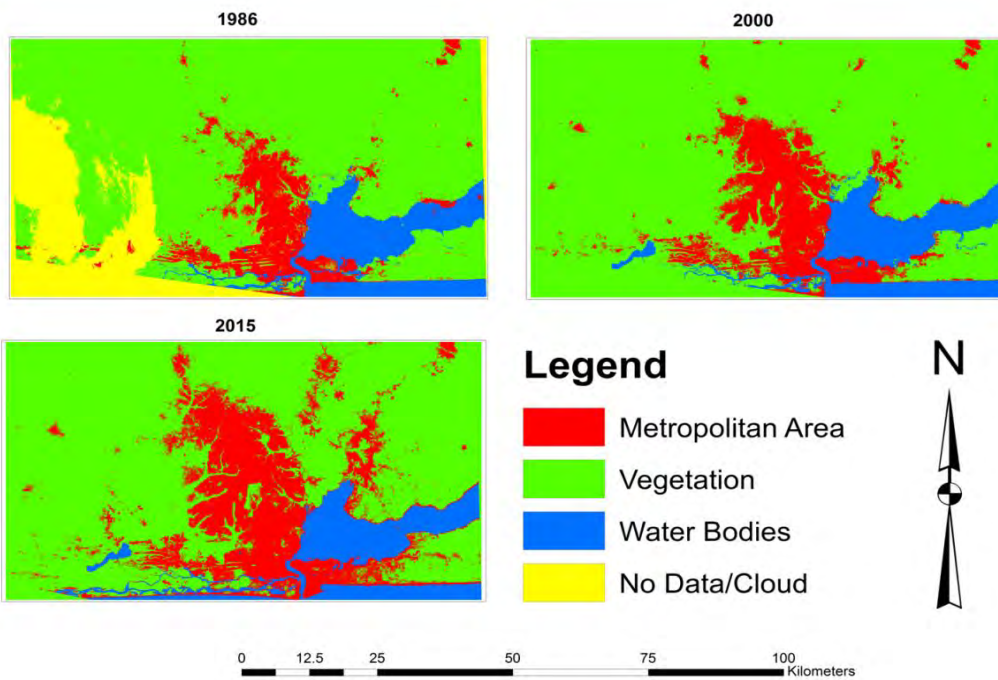


Fig. 9.2: Growth of the city by 1986  
Source: Author, 2018

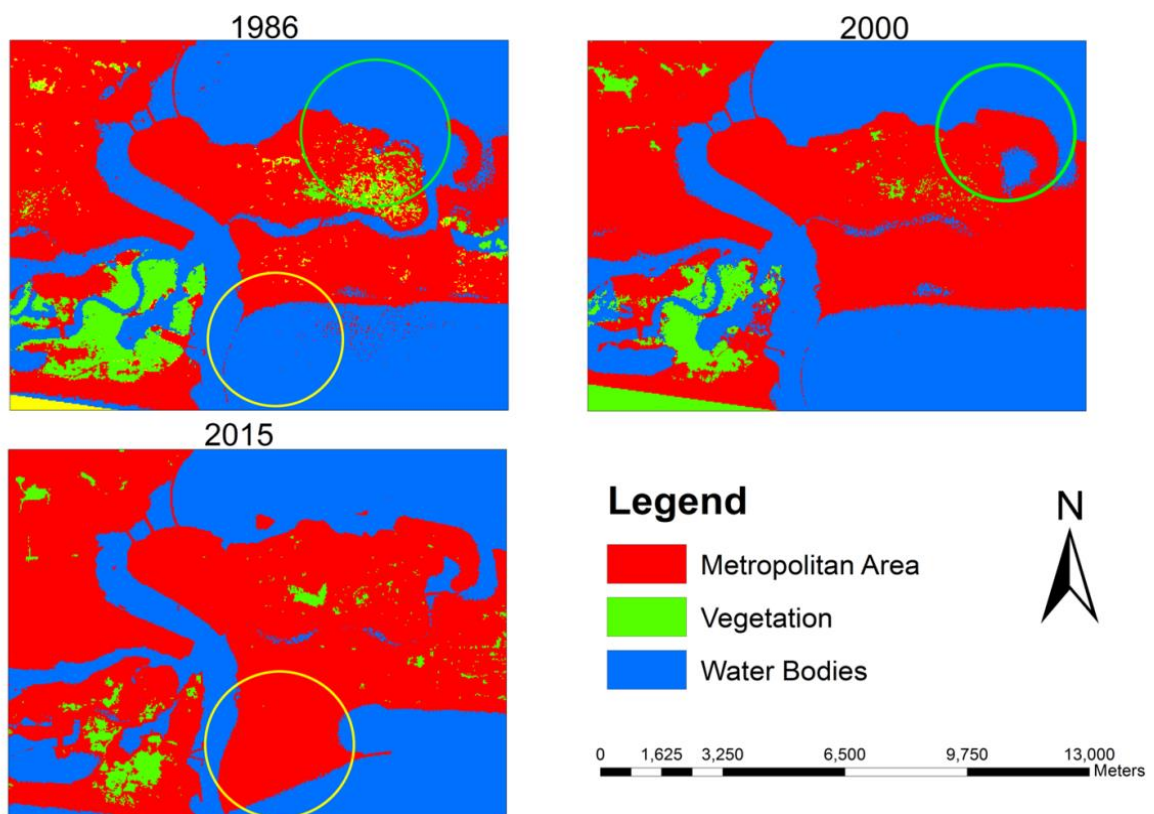


**Fig. 9.3:** Growth of the city by 2000  
**Source:** Author, 2018



**Fig. 9.4:** Maps showing temporal growth extent of the city, 1986-2015  
**Source:** Author, 2018

The yellow rings in Fig 9.5 indicate growth that occurred in the case study areas in the respective years, with vegetative cover gradually giving way to urban development. The 2000 map shows growth that has occurred on the island, indicated by the yellow ring. Sparse vegetative cover that was evident in Apapa in 1988 gave way completely, to urban development. Growth in Victoria Island involved sand filling and land reclamation from the lagoon and Atlantic Ocean, especially for the on-going development of Atlantic City as seen on the map. This growth pattern is shown as low-density development and unsustainable use of land.

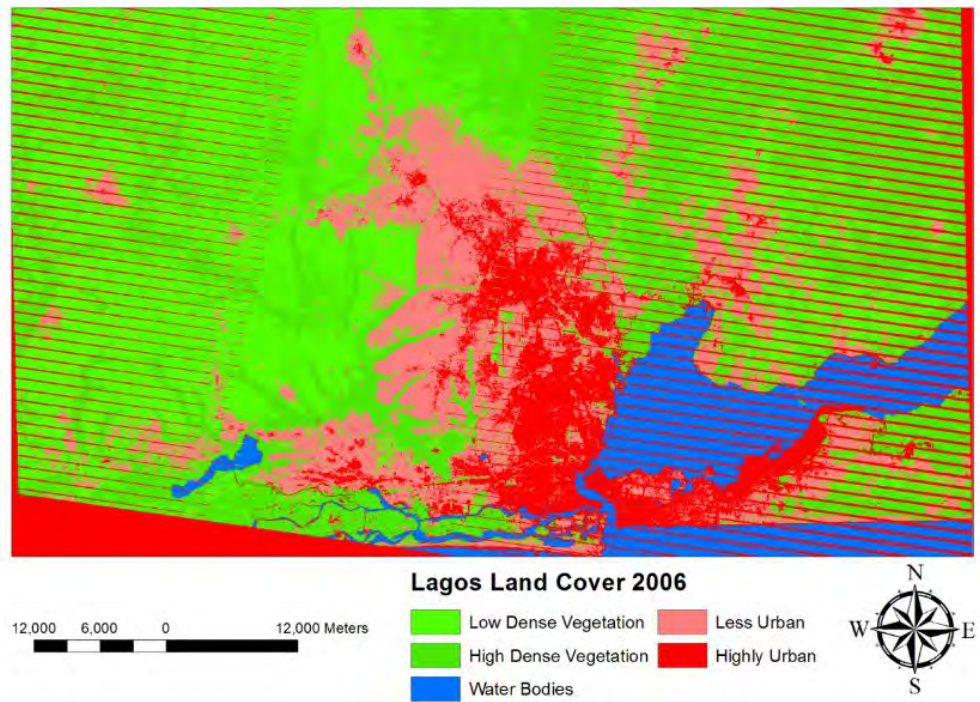


**Fig. 9.5:** Changing morphology of metropolitan Lagos, 1986-2015

**Source:** Author, 2018

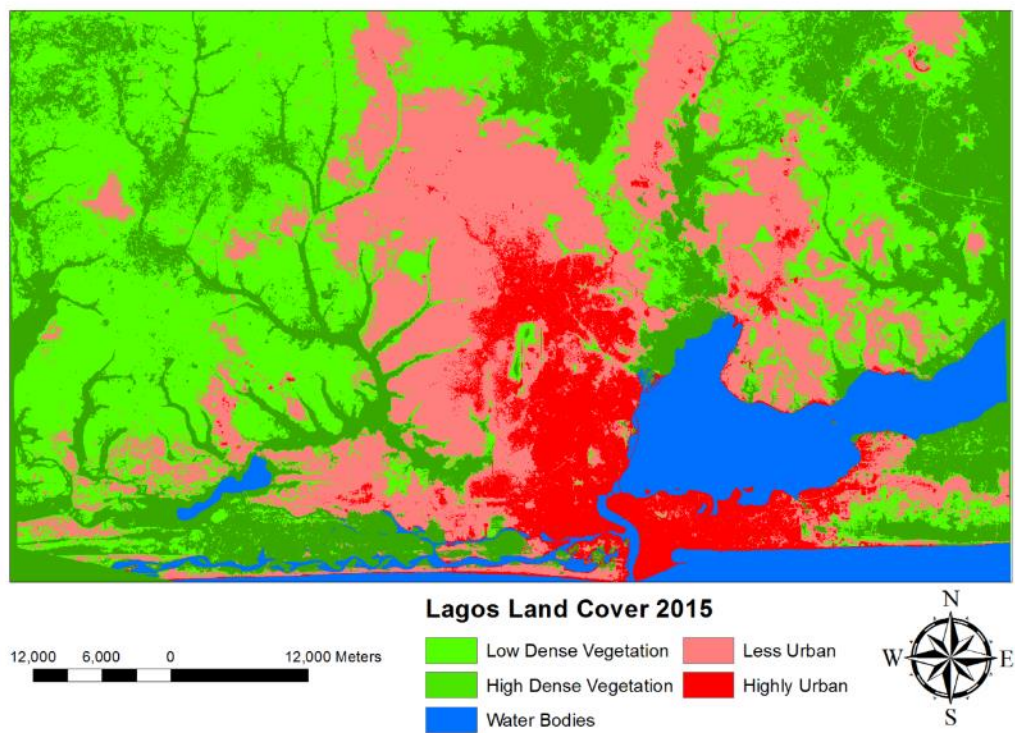
Figs. 9.6-9.8 show sprawling development into vegetative lands and water bodies. The growth patch in red is the highly-density built up parts of the city. The map shows less dense urban development spreading into the suburbs and it is more than twice the size of the more dense urban area. In 2015, the spreading development more than tripled spreading into other land. Fig.9.8 shows low-density suburban growth in the past 30 years of post-independence development in green and red while the pink part represents the dense urban core of the city.





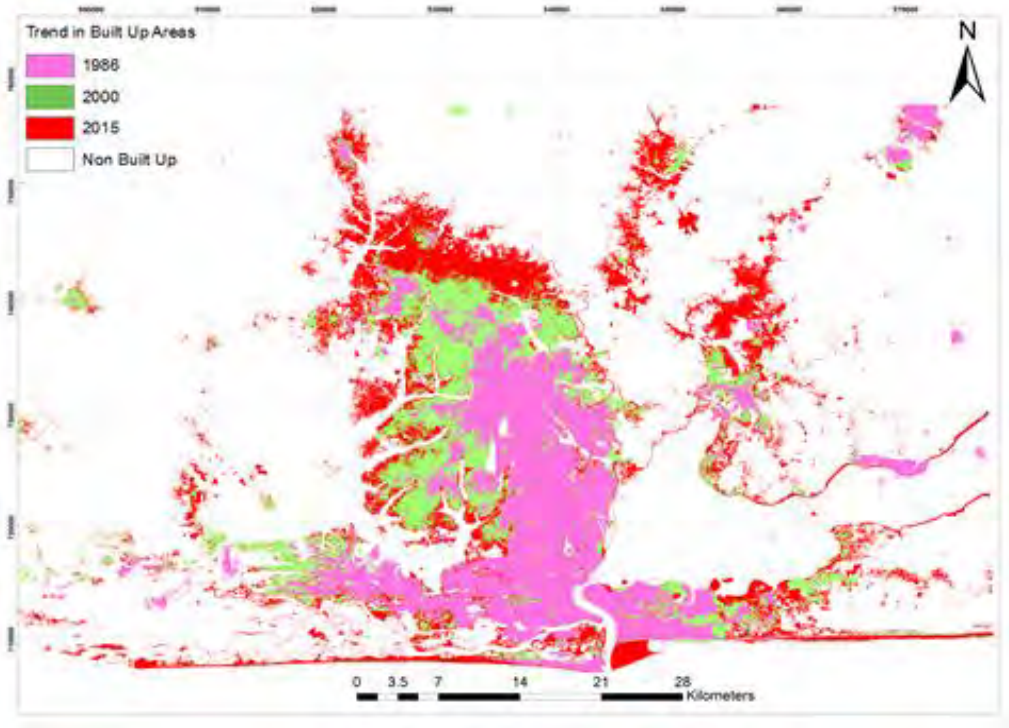
**Fig. 9.6:** Development intensity and sprawling development by 2006

**Source:** Author, 2018



**Fig. 9.7:** Development intensity and sprawling development by 2015

**Source:** Author, 2018



**Fig. 9.8:** Spatial patterns and built up areas in Lagos mega city

Source: Author, 2018

One of the challenges of using optical satellite data is the high tendency for data obstruction by cloud cover; moreover, most of the cloud was not found in the main Lagos metropolitan areas. Table 9.3 shows that some data in the 1986 map was lost due to cloud cover; however, this area still provided the required growth figure since the study measured growth and spatial extent.

**Table 9.3: Accuracy Assessment Results**

	<b>Prod. Acc.(Percent)</b>	<b>User Acc.(Percent)</b>	<b>Overall Accuracy</b>	<b>Kappa Coefficient</b>
<b>1986</b>				
Metropolitan	100	98.84	99.85%	0.9978
Vegetation	100	100		
Water	99.54	100		
<b>2000</b>				
Metropolitan	98.89	97.87	99.51%	0.992
Vegetation	99.61	99.64		
Water	99.63	100		
<b>2015</b>				
Metropolitan	99.01	93.06	97.59%	0.9628
Vegetation	95.56	99.35		
Water	99.53	100		

Source: Author, 2016

Cloud/no data is recorded around the Festac/Mile2/Badagry axis (see Fig 9.2). The implication is that land cover such as water, built up areas and vegetation may have been covered by cloud in 1986. Therefore, statistically, the areas free of cloud cover in the subsequent years 2000 and 2015 increased the size of water bodies, vegetation and built up areas. This is why the pixel values did not increase as much in 2015 because in the imagery for 2000, no data was lost to cloud cover. The figures show that the only land use that grew consistently is the metropolitan built up area. It increased to 205 km<sup>2</sup> and 318 km<sup>2</sup> respectively between 2000 and 2015. Considering the land size by 1986 the city almost doubled in size every 15 years, with the past 15 years witnessing more growth and development.

## **9.2 Morphological Assessment of the Three Selected Areas of Lagos Mega City**

Building use classification is based on activities and functions as outlined in the inventory table. Where there is more than one use, it is classified as mixed use. Residential land use occurs in various hierarchies, forms and densities. Housing density is classified based on the number of floors per building, and dwelling units per hectare. Commercial land use includes wholesale, retail, specialized services and office use. Different sizes and specializations have different requirements for space and facilities. Institutional land uses include public buildings and organizations, schools, learning institutions, government offices, military facilities, hospitals, etc. Industrial land use comprises of manufacturing and processing raw materials into finished goods. This requires a lot of space that is determined by the scale of production. Open spaces constitute parks, gardens, playgrounds, landscaped space, etc. These are planned public spaces for outdoor activities, leisure, recreation, sports, play and relaxation. Apart from their social function, they add to the scenery and aesthetic values of places. Landscaping contributes to environmental quality and aesthetics and hence bestows more value on a place and increases demand. Pedestrian networks and infrastructure include paths, walkways and facilities such as signs and street furniture required for the safety and convenience of pedestrians. Patterns of settlement often formed around architectural design and types of buildings. The study areas have varying architectural styles and geometric shapes and sizes. The buildings range from detached, to semi-detached units, blocks of flats and high-rise towers.

### 9.2.1 Lagos Island- case study one

The Island is the CBD of the Lagos metropolis with a very wide sphere of influence. It is a multifunctional centre with commercial, social, cultural and economic functions.

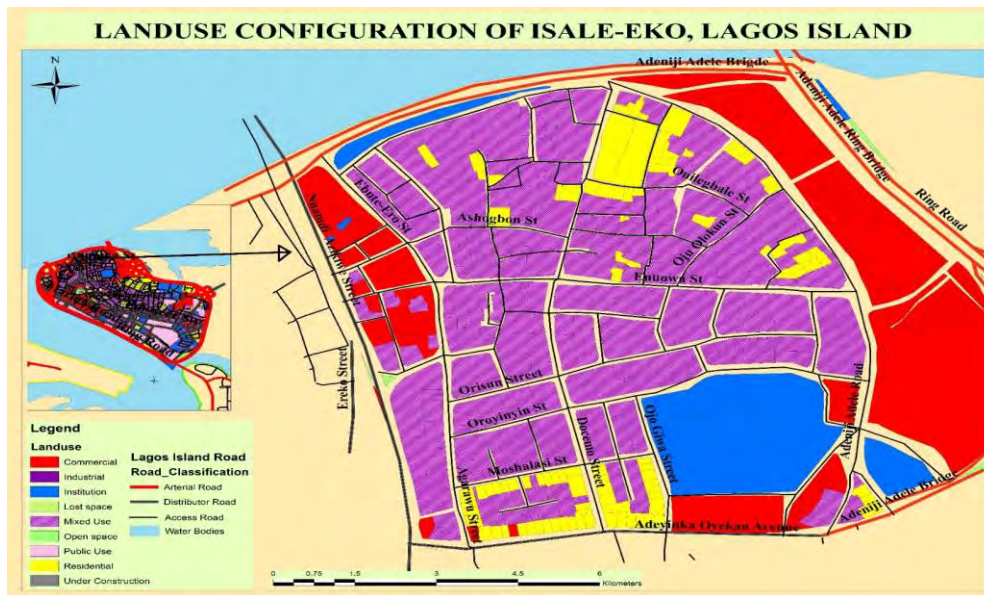
Apart from being the CBD, it is an indigenous settlement and also performs an inner city residential land use function. Lagos Island is a fusion of land uses; dominated by informal and formal commercial activities, predominantly markets of various forms, sizes and specialization. The indigenous Isale-Eko area consists of many markets and constrained residential land use for the crowded population while banks and formal commercial activities predominantly occupy the Marina. Table 9.4 shows the land use of 1,004 selected buildings surveyed on the Island; over 51% of building use is mixed comprising commercial and residential, with only 7.7% constituting residential land use. Due to the existence of several wholesale markets, residential use is not only depleted but the capacities of facilities fail due to poor proportioning. The mixed use observed includes residential flats converted to warehouses and shops, with chaotic unplanned multi-uses falling short of mixed-use development criteria. This invasion of residential land use by commercial activities, especially markets that are fused together, explains the congestion in the CBD. Figs. 9.9 and 9.10 show the observed land use on the Island.

**Table 9.4: Observed land uses in selected parts of Isale-Eko & Marina**

Lagos Island			
OID	Land Use	No. of buildings	Percentage
1	Commercial	280	27.8
2	Industrial	-	-
3	Institution/Public Use	96	9.6
4	Mixed use	515	51.3
5	Open space Lost spaces	30	2.8
6	Residential	77	7.7
7	Under construction	6	0.6
Total		1,004	100

Source: Author, 2018





**Fig. 9.9:** Land use in the Isale-Eko area of Lagos Island

**Source:** Author, 2018

Mixed uses are predominant in Isale Eko, with residential land use being invaded by commercial activities. The numerous markets and their activities have no clear boundaries. Several lost spaces, i.e., under-utilized open spaces and places mainly used as low capacity car parks (Marina) were also identified.



**Fig. 9.10:** Land use of the Marina Area of Lagos Island: These environs are mainly devoted to formal commercial uses, and public institutions and low capacity car parks.

**Source:** Author, 2018

Plate 9.1-9.5 shows commercial land use on Nnamdi Azikiwe Street, Balogun (Isale-Eko environs) on the Island. These parts of the Island links with the Tinubu and Oke-Arin markets that specialize in clothing, household products and general provisions. Given the insufficient roads system for the traffic generated, commercial activities shut down the roads, leaving little or no space for vehicular movement. The buildings setbacks are also used for commercial purposes. Table 9.5 presents a list of markets on the Island.



**Plate 9.1:** Markets and Commercial Activities on Nnamdi Azikiwe Street  
**Source:** Author, 2018



**Plate 9.2:** Formal commercial activities in the Isale-Eko area of the Island  
**Source:** Author, 2018





**Plate 9.3:** Parts of the Balogun Market and environs  
**Source:** Author, 2018



**Plate 9.4:** Building being transformed for commercial use  
**Source:** Author, 2018



**Plate 9.5:** Road median being used for street trading  
**Source:** Author, 2018

Plate 9.4 shows a building that was being remodeled into commercial shops by adding extra floors. This is the trend and practice on the Island by owners of properties seeking greater returns on rents. It is responsible for frequent collapse of buildings and the defective structures prevalent on the island. Plate 9.5 shows the median of Nnamdi Azikiwe Road leading to the bridge being used for informal trade. All these scenarios render the environment chaotic.

**Table 9.5: Markets on Lagos Island**

Markets	Location	Conditions
Balogun	Balogun	Though situated on Balogun Street from where it derived its name, it has no definite geographical delineation as it sprawls into adjoining streets and neighbourhoods. Street trading and chaotic conditions impede the flow of traffic and there are heavy traffic jams.
Idumota	Balogun, Ereko and environs	Street trading and chaotic conditions and poor flow of traffic.
Oke Arin	Oke Arin Street and environs	This market is known for sale of provisions. The stalls are conversions of former residential buildings. Street trading and chaotic conditions prevail and there is poor flow of traffic.
Tinubu	Tinubu Square	Located near Tinubu Square, street trading and chaotic conditions impede the flow of traffic.
Apongbon	Apongbon	Known for imported merchandise and street trading. Chaotic conditions and poor flow of traffic.
Jankara	Adeniji Adele, Adeyinka Oyekan Streets & environs	This is a fusion of old and extended markets in deteriorating condition. It is known for the sale of food items and herbal teas, street trading and chaotic conditions. There is poor flow of traffic.
Ita faji	Evans, Isalegangan & environs	Surrounded by three streets, street trading and chaotic conditions cause poor flow of traffic.
Dosunmu	Idumota environs	This is a unique and almost exclusive market for the sale of babies and children's clothing. Street trading and chaotic conditions lead to poor flow of traffic.
Ebute Ero	Ring Road, Ereko, Idita & environs	Sale of consumables, and wholesale clothing materials. Street trading and chaotic conditions.

Source: Author, 2018

### 9.2.1.1 Spatial Configuration: Plots and Building Patterns

The indigenous sense of place is evident in the landscape of Lagos Island which was the first space occupied in the mega city. However, the four quarters, Marina, Saro (Olowogbowo), and the Brazilian areas around Campos and Isale-Eko have varied features.

The Marina and Broad Street quarters were planned and are spacious, while Isale Eko reflects the clustered indigenous style. Fig. 9.11 show the indigenous irregular plot subdivision, and unorganized clusters of varying plot sizes, shapes and densities in the Isale-Eko parts of the CBD. This part of the Island includes neighbourhoods around Nnamdi Azikiwe Street, Adeniji Adele, Adeyinka Oyekan, Apogbon, Ebute-Ero and environs. All these neighbourhoods are congested with old and degenerating houses and facilities.

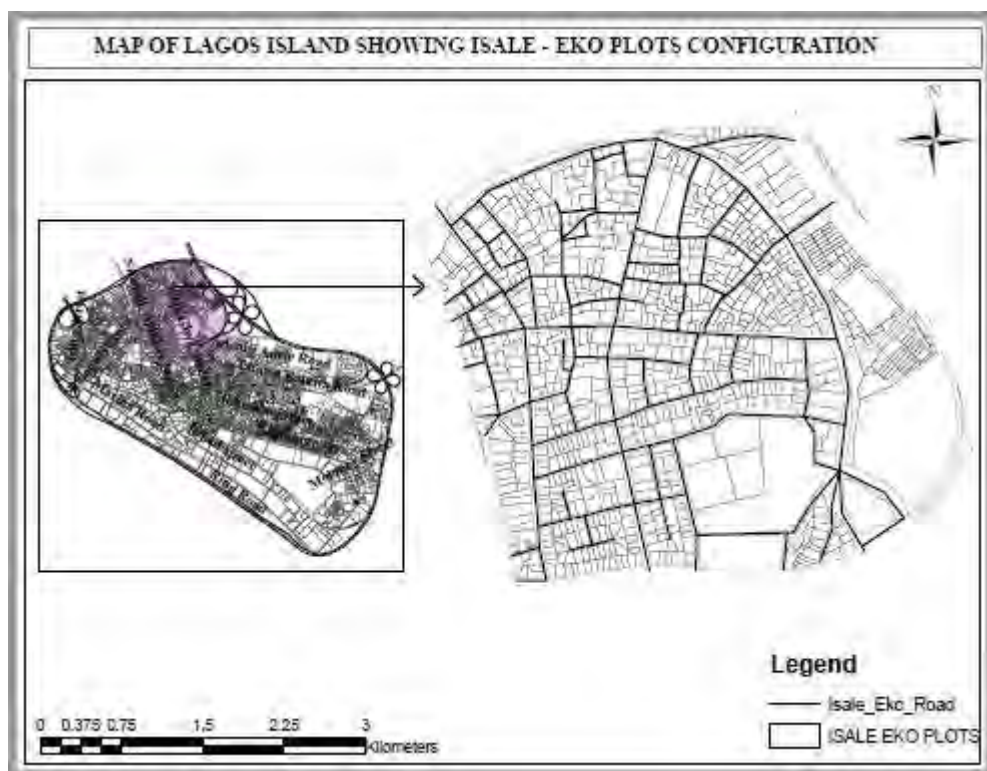
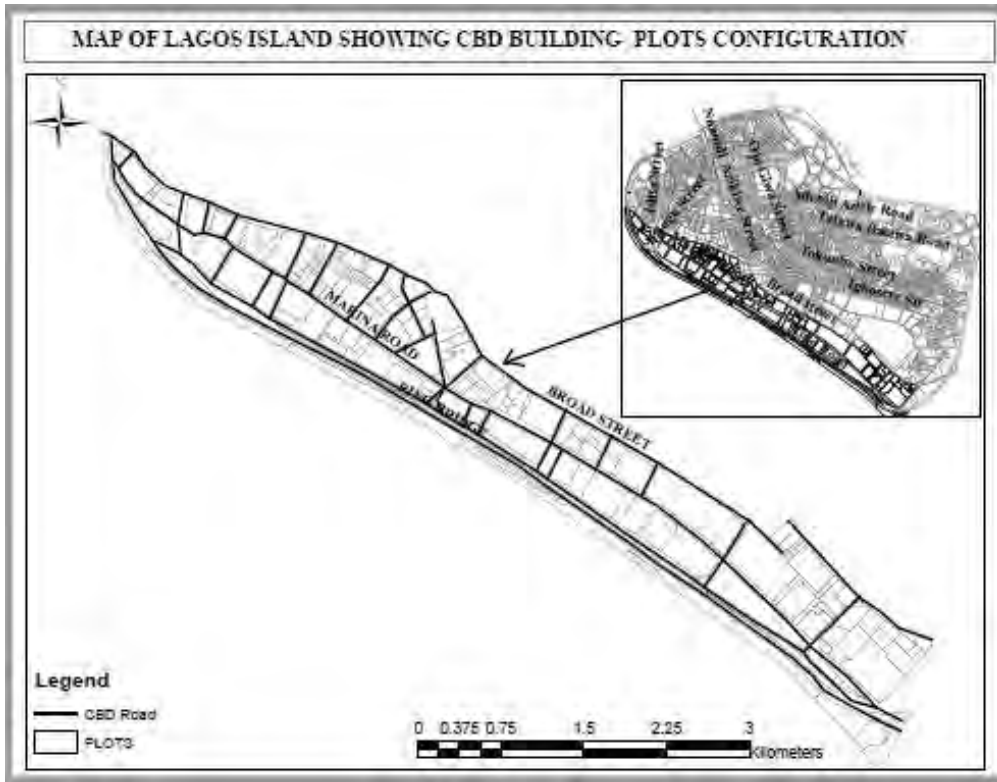


Fig. 9.11: Map showing irregular plot subdivision in Isale-Eko, Lagos Island

Source: Author, 2018

Fig 9.12 shows large, spacious plot sizes for business and commercial buildings on the Marina. The inconsistent development within irregular plot sizes and shapes (rectangular, triangular, trapezoidal, etc.) lacks order, symmetry and a sense of place.



**Fig. 9.12:** Map showing Plots layout on the Marina, Lagos Island

**Source:** Author, 2018

Fig. 9.13 shows development patterns in the Isale-Eko area. The buildings are congested and poorly spaced with no arrangement or orientation. There is little or no compliance with proportion, scale, plot coverage and set back requirements; hence the general environment lacks harmony and aesthetic qualities.

As shown in Fig.9.14, development patterns on the Marina are more organised and not as congested due to the colonial footprint. However, the majority of the spaces towards the right of the Marina are lost places that are underutilized. They are home to low capacity car parks that are always congested and insufficient. This is a source of traffic jams and chaos, as shown in Plate 9.6.





**Fig. 9.13:** Map showing development patterns in the Isale-Eko area of Lagos Island

Source: Author, 2018



**Fig. 9.14:** Map showing development patterns in the Marina area of Lagos Island

Source: Author, 2018





**Plate 9.6:** Aerial view of the Lagos Island Central Business District, Marina - commercial high-rise buildings and underutilized spaces used as car parks  
**Source:** Lagos State Government, Ministry of Information and Strategy 2009 in Filani, 2012





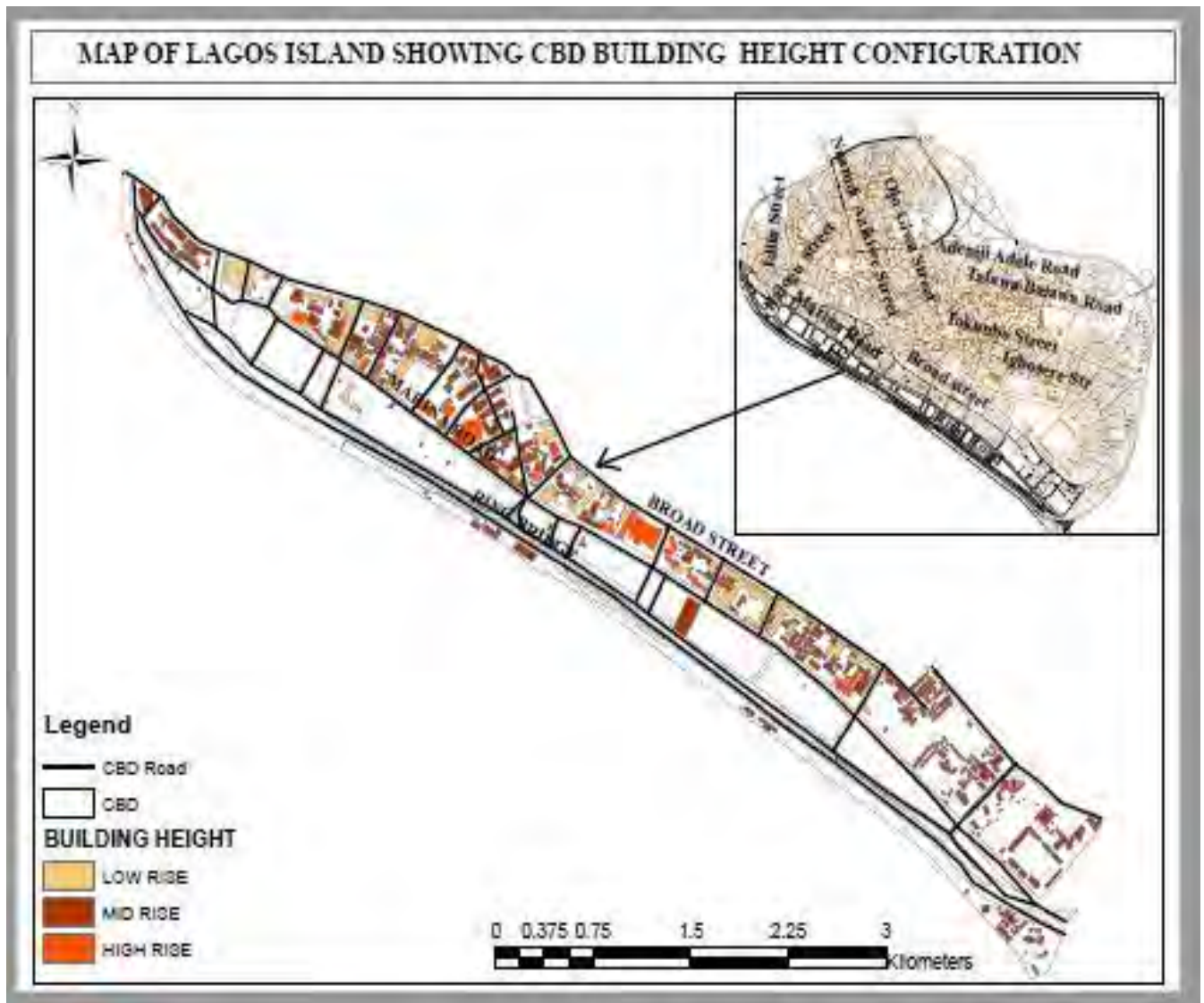


Fig. 9.16 Building heights in CBD, Marina Lagos Island

Author, 2018

The building types and architecture are not that varied and multifamily house and blocks of flats are common on Lagos Island. However, these apartments include other irregular rooming apartments in the form of hostels or dormitories with little or no supporting facilities that accommodate many people. The Marina is dominated by high-rise commercial buildings. Plates 9.7, 9.8 and 9.9 show the building types across the Island. No consideration is given to safety, convenience and aesthetics and there is poor access to light and airflow due to congested patterns of development.





**Plate 9.7:** Aerial View of Marina Extending into Isale-Eko  
**Source:** <http://static.panoramio.com/photos/large/23529966.jpg>



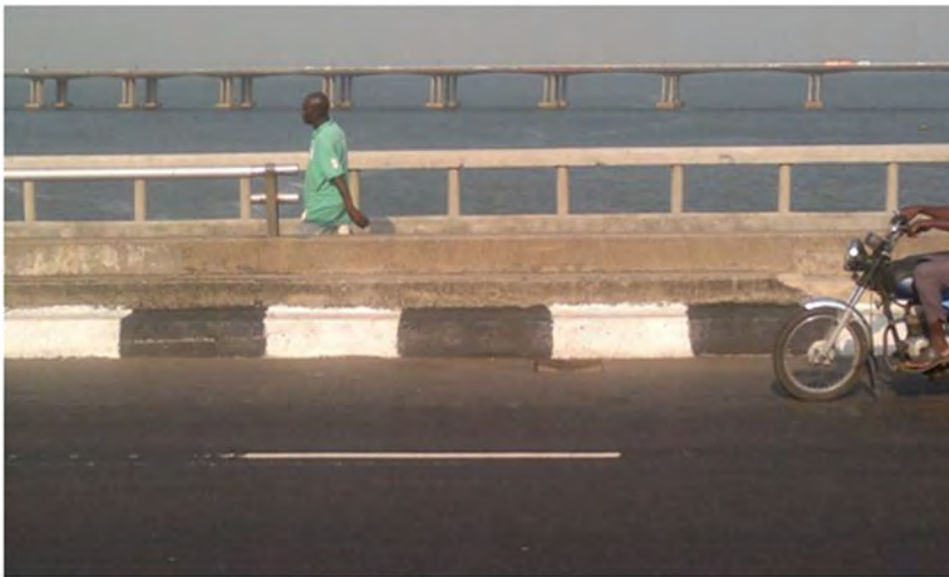
**Plate 9.8:** Blocks of buildings in Lagos Island  
**Source:** Author, 2018



**Plate 9.9:** Balogun Road  
**Source:** <http://www.aboutlagos.com/?p=776>  
Accessed 23 September 2016, Author, 2018

### 9.2.1.3 The Road Network Infrastructure and Carrying Capacity

Two arterial roads through the Eko and Carter bridges link the Island with the mainland (see plate 9.10). The road network is shown in Fig.9.17. It was observed that Lagos Island is not planned on a grid or regular pattern; the roads are narrow and irregular and in some cases disjointed. Apart from not being favourable to traffic flow, the curvilinear roads create a poor sense of legibility and permeability. Amongst other factors, poor traffic management and choices are responsible for the resultant congestion and chaotic conditions in the CBD, especially given the fact that its land uses generate high volumes of traffic.



**Plate 9.10:** The bridges that link Lagos Island with the mainland  
**Source:** Author, 2018





Fig. 9.17: Map showing the roads network on Lagos Island  
 Source: Author, 2016

### 9.2.1.4 Environmental quality and Condition of Buildings

Table 9.7 summarizes the observed score of environmental attributes in different parts of the Island. With a mean score of 13.95 points (31.7%), out of an expected maximum score of 44 (100%), and a standard deviation of 21.25, the CBD clearly lacks the attributes of a good city. The significantly high deviations in the table show that Lagos Island has poor housing variety, building conditions and environmental quality. The old inner city has congested, poorly spaced, dilapidated houses, and infrastructure and carrying capacity are ageing and failing. With several buildings deteriorating and poor spacing standards, Lagos Island is in the process of further degeneration that calls for innovative approaches to rehabilitation. It was also observed that vegetation, trees and gardens are almost non-existent. There is constant traffic congestion due to the nature of the road network and no provision is made for non-motorised movement. Plates, 9.11-9.16 show the poor environmental quality and sanitation in the CBD as well as the condition of the buildings. Physical observation revealed congestion amidst poor maintenance, structural defects, and no sense of spacing and regard for setbacks. There is no harmony in the spatial relationships of urban elements. The SD of mean scores shows the validity of observed scores from the three independent observations.

**Table 9.7: Means of scores allocated to urban features in Lagos Island**

City Elements	Independent Mean Scores			SD Of Mean Scores	$\Sigma$ Mean Score	Mean	Exp Mean	SD of Mean Scores & Exp. Mean
Housing Variety	1.00	1.08	1.00	0.04	3.08	1.03	4	2.10
Condition of buildings	1.46	1.62	1.46	0.09	4.54	1.51	4	1.76
Order, harmony	1.15	1.31	1.15	0.09	3.62	1.21	4	1.97
Open Spaces	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Trees, Parks & Gardens	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Sanitation	1.23	1.23	1.23	0.00	3.69	1.23	4	1.96
Condition of drainage	1.54	1.31	1.31	0.13	4.15	1.38	4	1.85
Ped/ non-motorised Fac.	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Condition of Road	2.15	2.08	1.69	0.25	5.92	1.97	4	1.44
Traffic Flow	1.31	1.31	1.38	0.04	4.00	1.33	4	1.89
Parking Structure	1.23	1.31	1.31	0.04	3.85	1.28	4	1.92
Total	14.08	14.23	13.54	0.36	41.85	13.95	44	21.25

**Key:** Very Good=4; Good =3; Average=2; Poor=1

**Source:** Author, 2016



**Plate 9.11:** Congested buildings around Adeniji Adele Environs, Lagos Island  
**Source:** Author, 2018



**Plate 9.12:** Buildings around Idumota, Lagos Island  
**Source:** Author, 2018





**Plate 9.13:** Dilapidated building in Lagos Island  
**Source:** Author, 2018



**Plate 9.14:** Poor housing conditions on Lagos Island  
**Source:** Author, 2018





**Plate 9.15:** Nnamdi Azikiwe Street, Idumota

**Source:**

[http://www.nairaland.com/attachments/2410382\\_idumota\\_jpege1186ddda58eac16a21711651beca342](http://www.nairaland.com/attachments/2410382_idumota_jpege1186ddda58eac16a21711651beca342)  
accessed Friday 23 September 2016



**Plate 9.16:** Poor sanitation in Lagos Island

**Source:**

Author,

2018

### 9.2.2 Apapa – Case study two

Apapa is geographically located between, Lat. 6° 41' and 6° 48' N and Long. 3° 3' and 3° 40' E with a total land mass of 38.50 km<sup>2</sup> on the coastal area of south-western Nigeria. It is landlocked and is linked to Lagos Island by the Eko or Carter bridges. Apapa is an LGA, Nigeria's leading port and a residential community that provides housing and serves industry and the port (see Figs. 9.18 and 9.19). These land uses are prevalent in two parts, with residential use bounded by Marine and Liverpool up to the environs of Warehouse Roads and mixed commercial and industrial uses from Warehouse and Creek Roads. There is evidence of commercial land uses encroaching on residential uses. Table 9.8 shows that the majority of the buildings surveyed are for residential (62%) and commercial (12%) use. Commercial land uses include banks, shopping plazas, hotels, and offices for port support and services documentation, etc. About 15% of the area is mixed commercial and other uses that encroach on residential land use. Commercial land uses include offices for transport and logistics companies, oil companies, flourmills and so on. This is due to the proximity of the port and the CBD. Apapa amusement park was the only recreational land use and gardens observed. Plates 9.17 and 9.18 show the port/ industrial land use.

**Table 9.8: Observed land uses in Apapa**

<b>OID</b>	<b>Land Use</b>	<b>No. of buildings</b>	<b>Percentage</b>
1	Commercial	107	12.0
2	Industrial	97	10.8
3	Institution/ Public Use	2	0.2
4	Mixed Use	132	14.7
5	Open Space/Recreational	2	0.2
6	Residential	557	62.0
Total		897	100

**Source:** Author, 2018

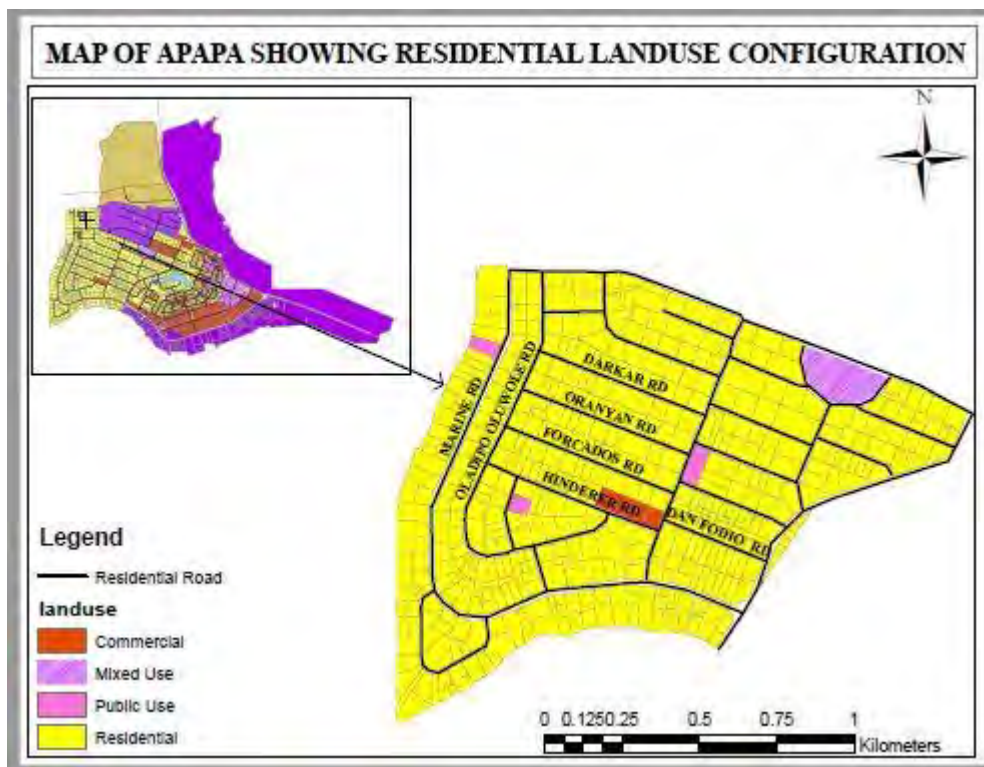


Fig. 9.18: Residential land use in Apapa  
 Source: Author, 2018

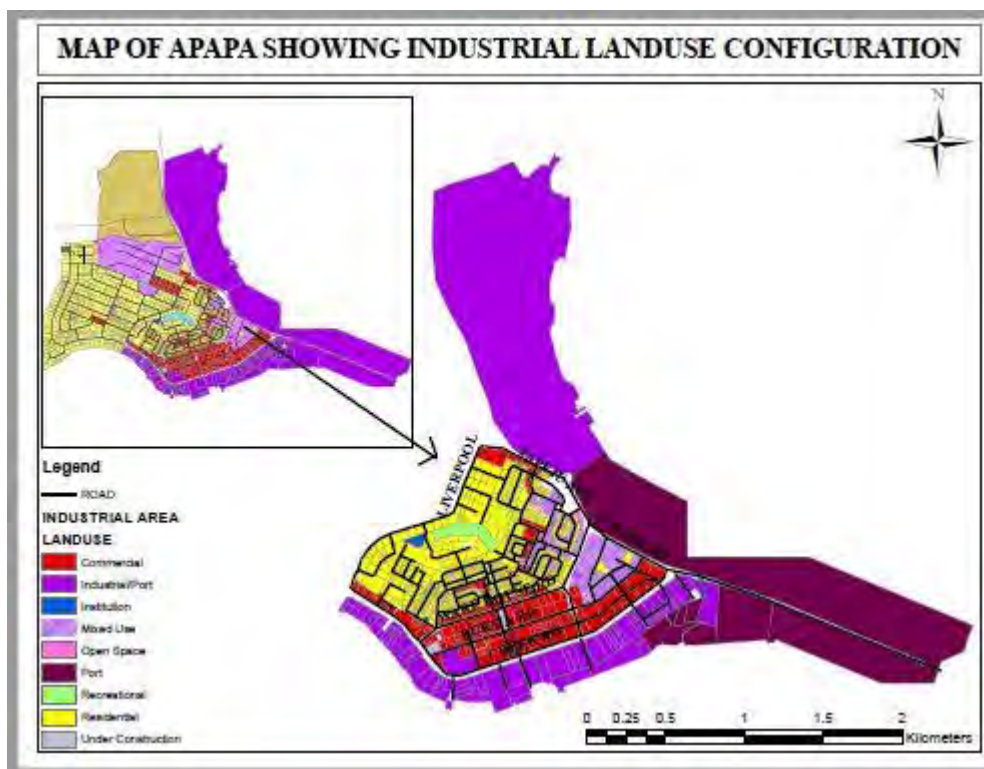


Fig. 9.19: Industrial/ port and commercial land uses  
 Source: Author, 2018

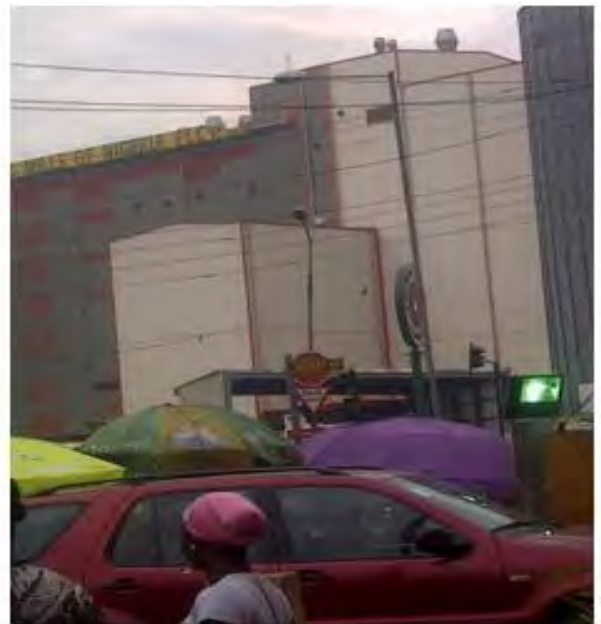




**Plate 9.17**

Port Activities and the Flour Mills (Industrial Use)

Source: Author, 2018



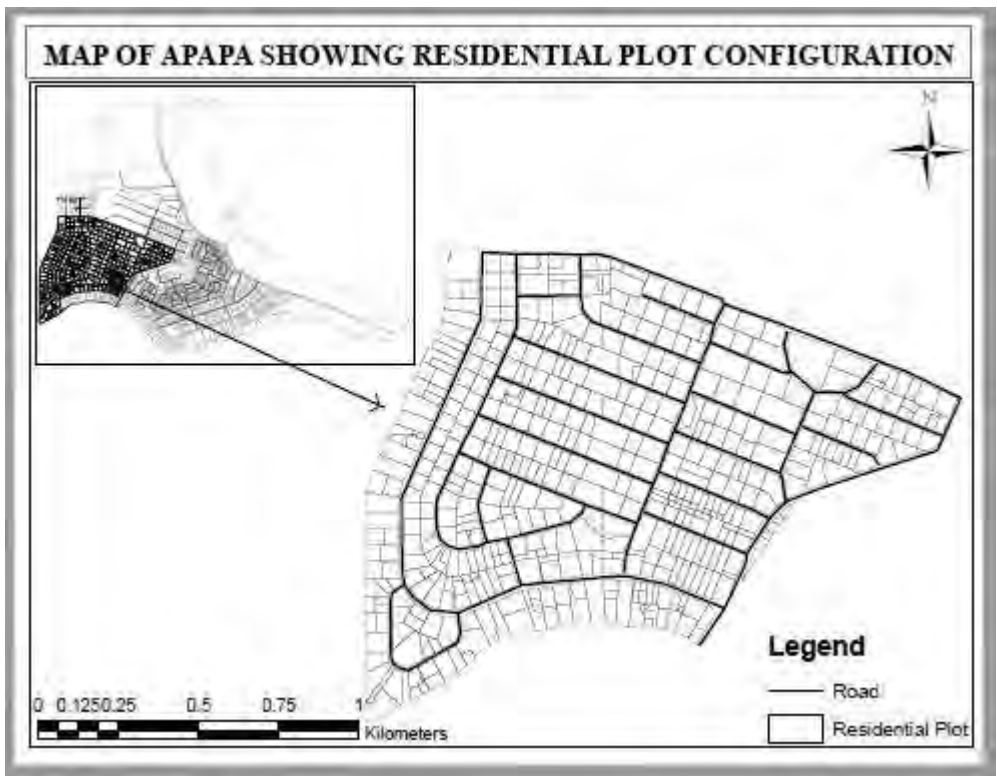
**Plate 9.18**

### 9.2.2.1 Spatial Configuration: Plots and Building Patterns

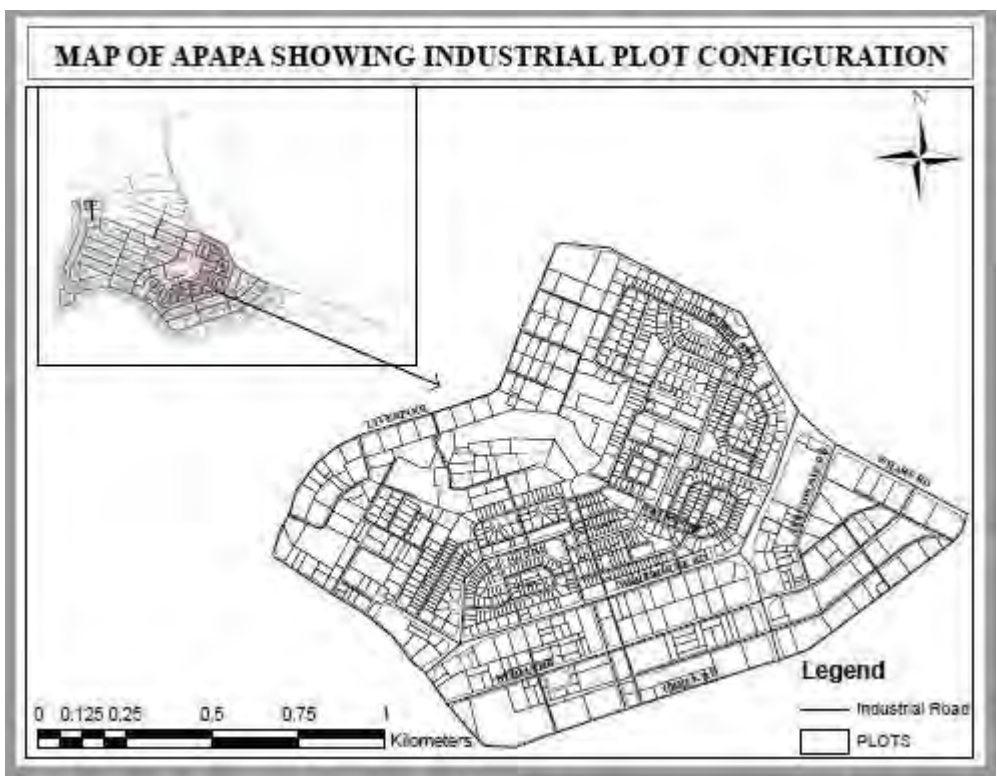
Spatial arrangements in Apapa are not as clustered as on Lagos Island. Fig. 9.20 shows regular plot shapes and sizes, mostly rectangular and low-density residential plots. The areas around Park Lane, Marine Road, Liver Pool and Point Roads, Darkar Road, Emotan Road, Bristol Road, and Obanta Road and environs are predominantly low-density development plots.

Fig.9.21 show that the high-density clusters include the neighbourhoods in Kofo Abayomi, Oniru Road, Rhodes Crescent, Pele-Wura Crescent, Randle Close, Doula Road, Adele Road, Bombay Crescent, Calcutta Crescent, etc. These smaller plots are surrounded by commercial and industrial land use on the Creek, Ware House, Commercial, Burma and Wharf Roads.

Fig. 9.22 shows clustered low-density development patterns; poor land utilization and wasted spaces that can be reclaimed for high density, mixed-use development. The buildings and spatial development show some consistency as the city was built to a plan. Fig. 9.23 shows parts of industrial development on Creek and Warehouse Roads.



**Fig. 9.20:** Apapa Map showing plots layout  
**Source:** Author, 2018



**Fig. 9.21:** Apapa Map showing Plots layout of selected streets  
**Source:** Author, 2018



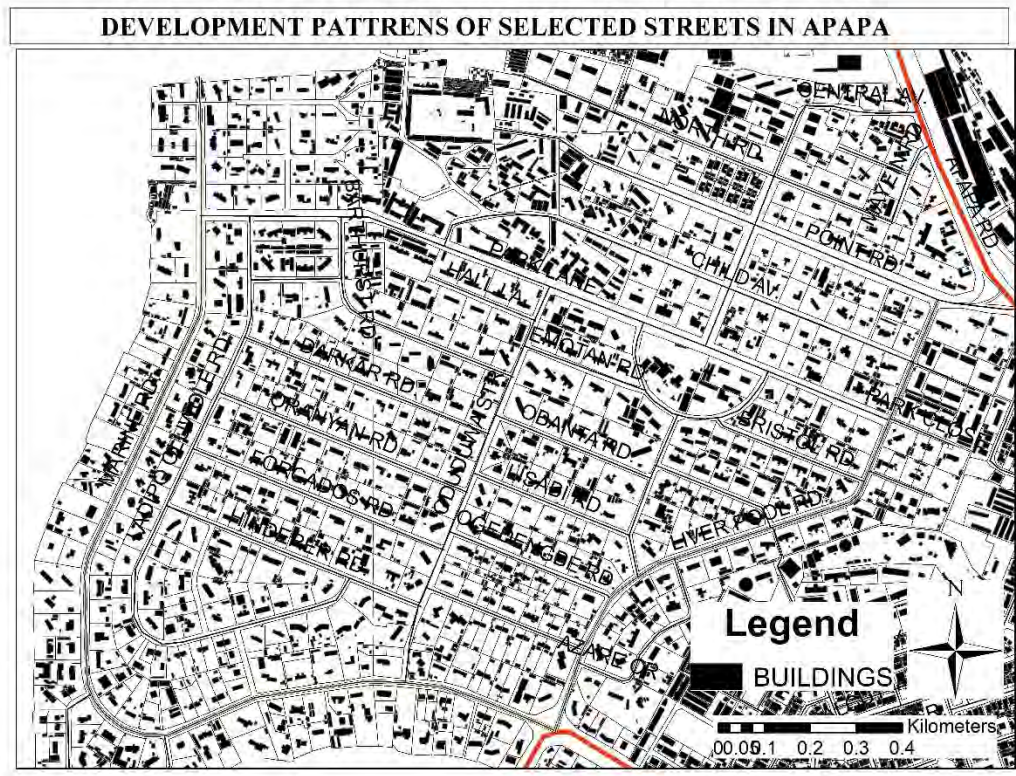


Fig. 9.22: Map showing development patterns in Apapa, Lagos  
 Source: Author, 2018

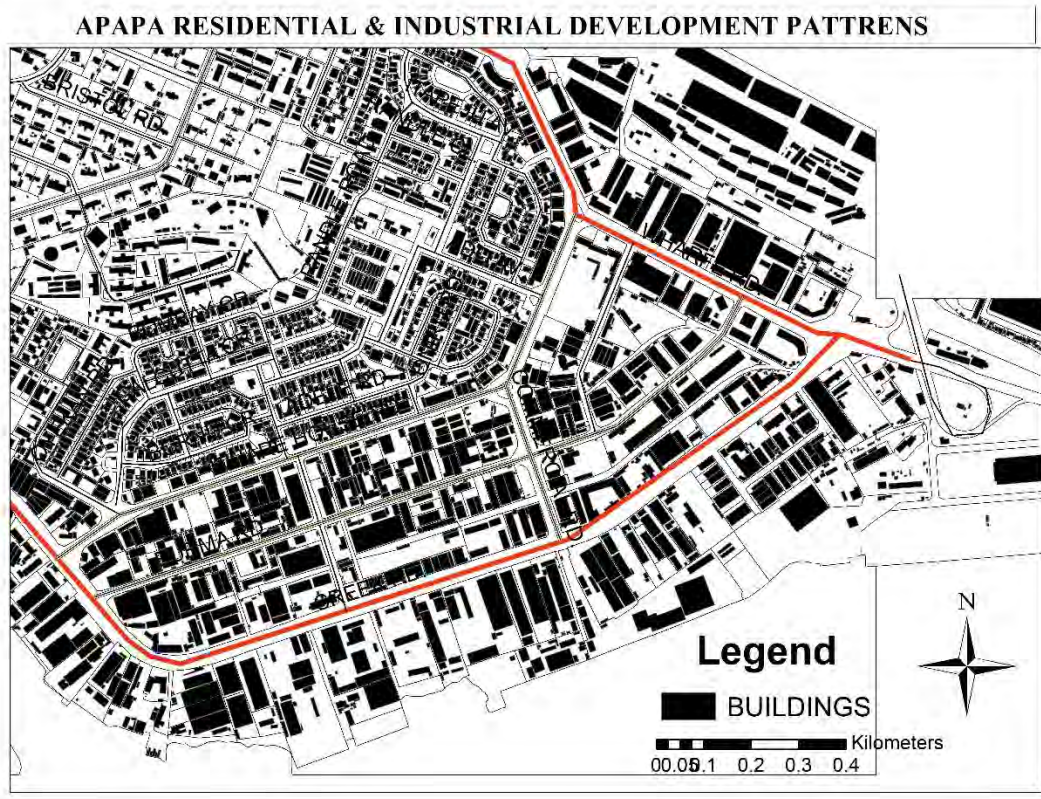


Fig. 9.23: Map showing development patterns in selected parts of Apapa, Lagos  
 Source: Author, 2018

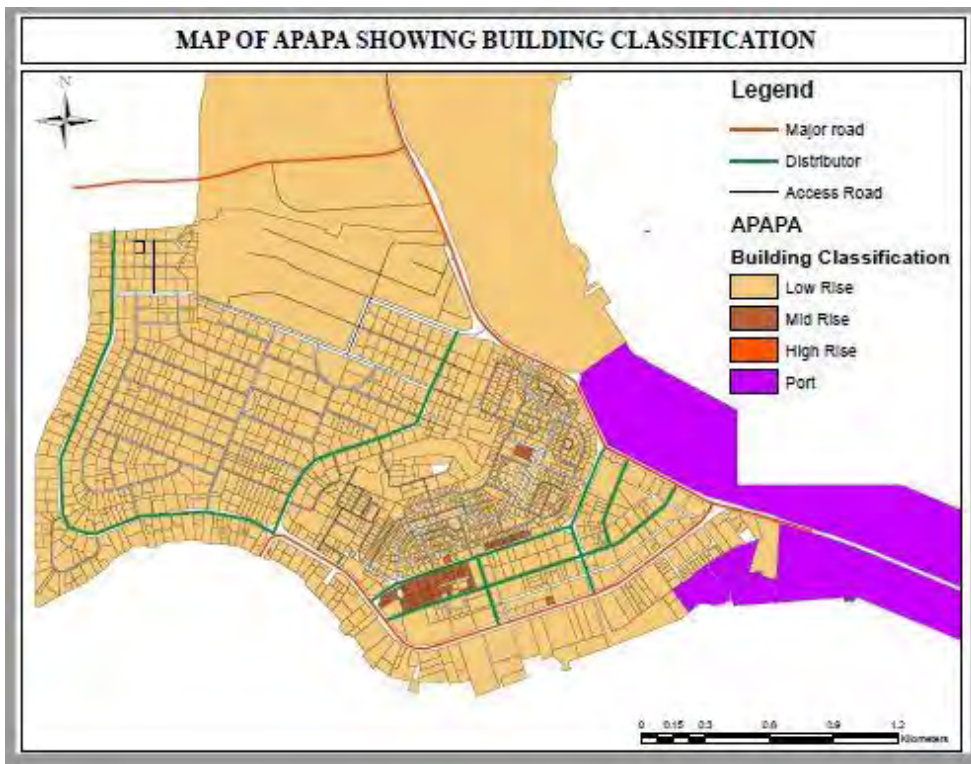
### 9.2.2.2 Building Types, Height, Density and Land Utilization

Plates 9.19-9.22 show different architectural styles and concepts in the study area. There are no specific designs and concepts; developments range from single-family detached residential buildings, to duplexes and blocks of flats. High-rise buildings are not prevalent in this area. Table 9.9 shows that the field survey revealed the prevalence of low-density buildings in Apapa; 98.2% of the 826 buildings surveyed were single to four floors. Buildings above five floors constituted less than 2%. Fig. 9.24 shows that the majority of low-density developments are not more than five floors. These developments are low density housing ranging from 4-6 dwelling units per plot to about 60 units per hectare. With an average household size of six in Nigeria, this translates to about 360 persons per ha which does not conform to recommended density limits for compact development.

**Table 9.9: Building heights observed in Apapa**

OID	Bdg_Height	No. of Buildings	Percentage
1	Low Rise	882	98.3
2	Mid Rise	10	1.1
3	High Rise	3	0.3
4	Open spaces/others	2	0.2
Total		897	100

Source: Source: Author, 2018



**Fig. 9.24:**  
Building Heights in Apapa  
Source: Author, 2018





**Plate 9.19:** House types on Wharf Road and environs

**Source:** Author, 2018







**Plate 9.20:** Building types on Marine Road  
**Source:** Author, 2018



**Plate 9.21:** Warehouse Road  
**Source:** Author, 2018



**Plate 9.22:** Development on Creek Road  
**Source:** Author, 2018

### 9.2.2.3 The Road Network Infrastructure and Carrying Capacity

Fig. 9.25 shows that the road network comprises of low capacity access roads to residential neighbourhoods. Due consideration was not given to cargo and port activities which require heavy duty lorries and trucks. The scale of the network is smaller than the volume of traffic the port and commercial land uses attracts, creating bottlenecks. Intermodal transportation, which should provide alternatives for cargo logistics, is almost non-existent in this landlocked city; hence the dependence on road haulage that poses risks to lives and causes wasted time due to traffic jams.

Roads gridlocks are also caused by several other factors. It was observed that the roads are in very bad condition and that poor drainage and blockages lead to flooding, which complicates the movement of traffic. The environment is generally congested with traffic and heavy-duty vehicles and containers. Plate 9.23 shows traffic congestion and a queue of petroleum haulage vehicles.

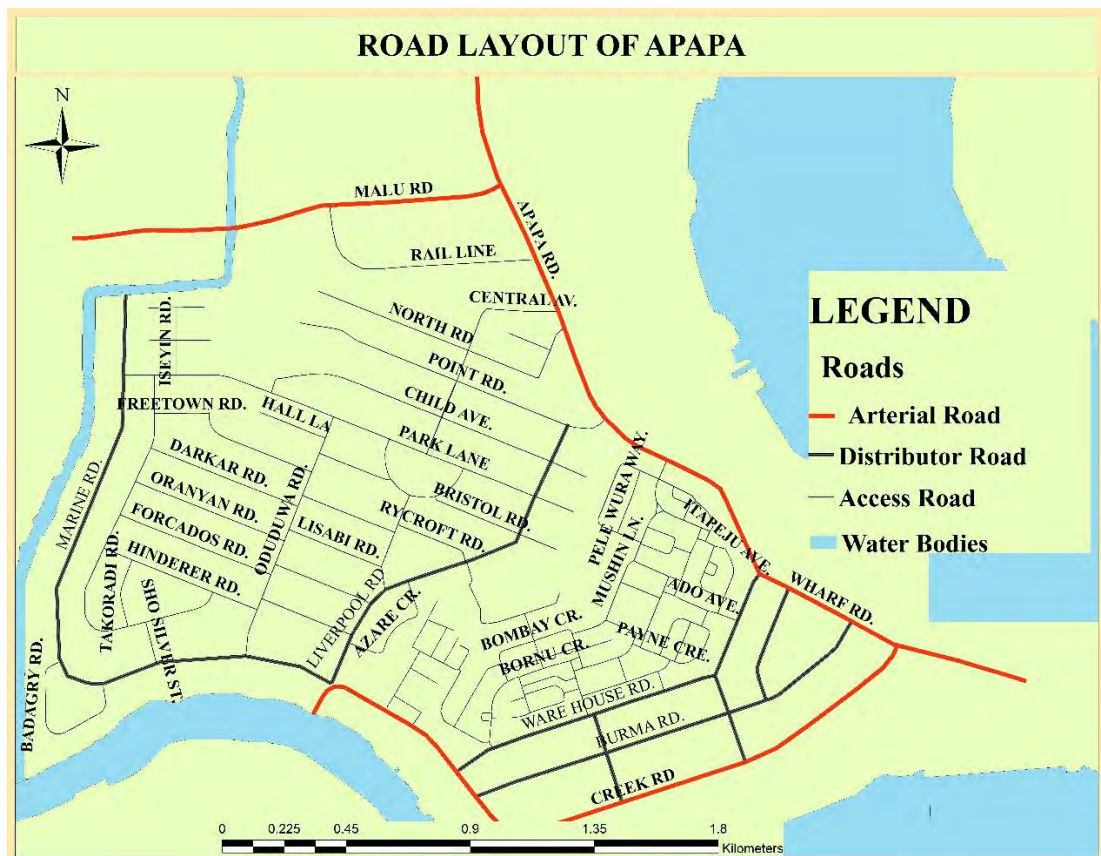


Fig. 9.25: Map showing the road network in Apapa  
Source: Author, 2018





**Plate 9.23:** Traffic on Apapa Road in Lagos on a Wednesday (9/7/14)

**Source:** Nan [Http://Thenationonline.net/photo-traffic-on-apapa-road-lagos/](http://Thenationonline.net/photo-traffic-on-apapa-road-lagos/) Accessed Monday 25<sup>th</sup> July 2016

### 9.2.2.4 Environmental quality and the Condition of Buildings

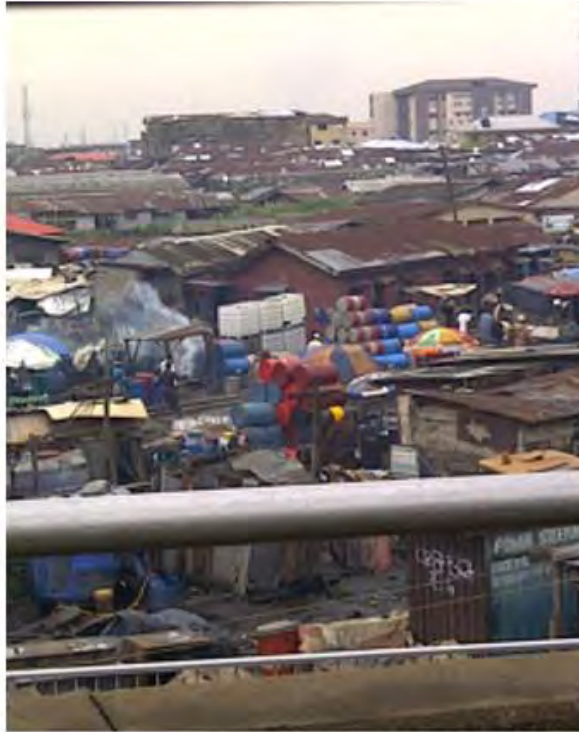
Table 9.10 shows the means of scores allocated to urban features in Apapa. A total of 17.19 points was obtained. At about 40% of the expected score of 44, this translates to a very significant 18.96 deviation from the expected score. Apapa hence lacks the attributes of a good place. There is evidence of degradation (plate 9.24) with poorly maintained buildings that lack quality and violate building lines. The street setbacks are violated by illegal structures used for commercial purposes, making future expansion almost impossible. All the selected areas have no open spaces or pedestrianized networks. The survey revealed that, while drainage is provided for, it is not in good condition. Many drains are open, posing a safety risk, and are littered with refuse. Parking for the high-volume traffic is grossly inadequate. Plates 9.25-9.27 show open drains littered with refuse.

**Table 9.10: Means of scores allocated to urban features in Apapa**

City Elements	Independent Mean Scores			SD of Mean Scores	$\Sigma$ Mean Score	Mean	Exp Mean	SD of Mean Scores & Exp. Mean
Housing Variety	2.06	2.00	2.00	0.04	6.06	2.02	4	1.40
Condition of buildings	3.00	2.81	2.81	0.11	8.63	2.88	4	0.79
Order, harmony	1.75	1.56	1.56	0.11	4.88	1.63	4	1.68
Open Spaces	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Trees, Parks and Gardens	1.19	1.13	1.19	0.04	3.50	1.17	4	2.00
Sanitation	1.50	1.38	1.56	0.10	4.44	1.48	4	1.78
Condition of drainage	1.50	1.56	1.50	0.04	4.56	1.52	4	1.75
Ped/ non-motorised Fac.	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Condition of Road network	2.00	1.94	1.75	0.13	5.69	1.90	4	1.48
Traffic Flow	1.50	1.38	1.56	0.10	4.44	1.48	4	1.78
Parking Structure	1.13	1.19	1.06	0.06	3.38	1.13	4	2.03
Total	17.63	16.94	17.00	0.38	51.56	17.19	44	18.96

**Index Key: Very Good=4; Good =3; Average=2; Poor=1**

**Source:** Author, 2018



**Plate 9.24:** The degenerating environment in Apapa. The pictures show that the port city is degenerating with old houses and poor environmental conditions.  
**Source:** Author, 2018





**Plate 9.25:** Blocked drainage on Creek Road  
**Source:** Author, 2018



**Plate 9.26:** Open drainage on Marine Road  
**Source:** Author, 2018



**Plate 9.27:** Drainage littered with refuse on Warehouse Road  
**Source:** Author, 2018

### 9.2.3 Victoria Island - case study three

Victoria Island is a prominent coastal town in the Lagos Metropolis, bounded by Lagos Island, the Lekki-Peninsular and the Lagos lagoon. The 1978 Master Plan provided for exclusive residential land use (Agamah, 2008) for the upper class; Victoria Island is thus one of the most exclusive and expensive areas in Nigeria. Due to continuous appreciation of property values, residential land has been taken over by businesses in order to obtain the highest possible return on investment. The former residential town is now the main commercial pole, with increasingly failing infrastructure. Kadiri and Ayinde's (2010) report on sustainable human settlements published in the State of the Environment Report (SER) noted that 62.5% of Nigerian banks had their offices on Victoria Island, while more than 90% of insurance companies' head offices are in Lagos, with Victoria Island accounting for almost 50%. These statistics illustrate that the Island is the centre of the country's financial activities. This was made possible by the change in land use from residential to commercial.

A unique trend in land use was observed on the Island in that there seems to be specialization of uses. Similar businesses are concentrated on particular streets and environs, with some streets predominantly for banking, hotels and hospitality, telecommunications services, and institutional uses, respectively. The ten streets observed all consist of mixed uses with one predominating over others.

Table 9.11 shows the prevalence of commercial land use at 56% with residential land use amounting to around 27.5%. This suggests fast decreasing residential use. It is due to continuous appreciation of the land value brought about by external economic factors; strategic location in relation to markets, ports and high-class patronage. Dominant commercial use has changed the residential nature of the Island with increased traffic.

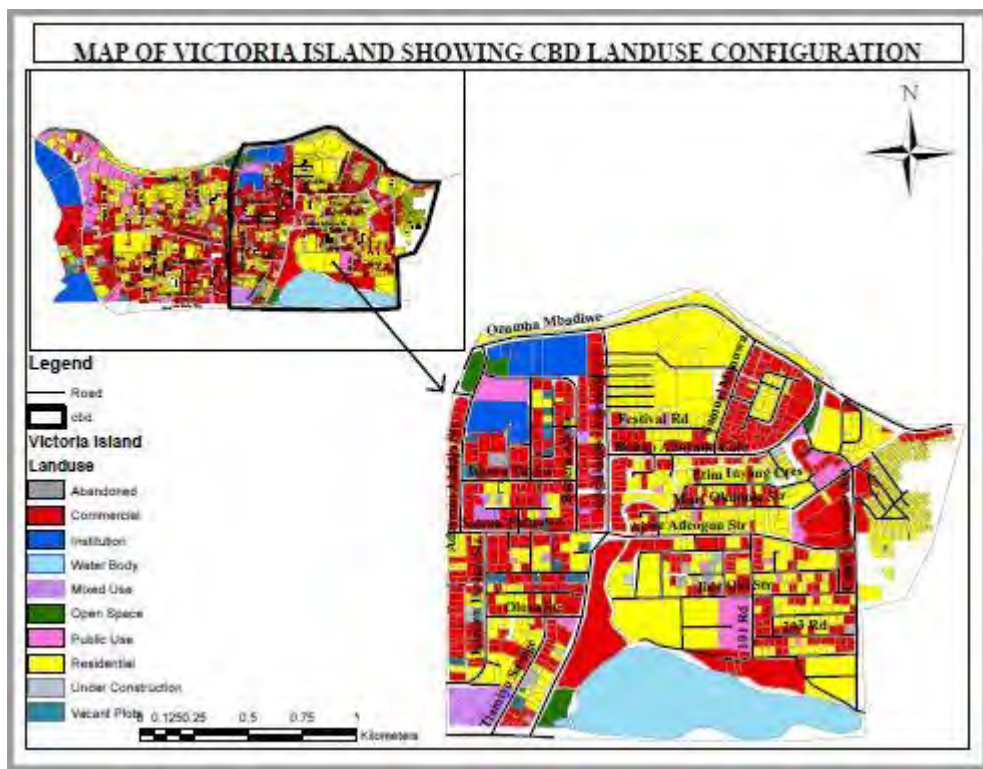
**Table 9.11: Observed land uses in Victoria Island**

OID	Land Use	No. of buildings	Percentage
1	Commercial	359	56
2	Industrial	-	-
3	Institution/ Public Use	11	1.7
4	Mixed Use	69	10.7
5	Open Space/Recreational	3	0.46
6	Residential	177	27.5
7	Under Construction	23	3.5
Total		642	100

Source: Author, 2018

These changes have resulted in increased people and vehicles using the infrastructure that was intended for residential land use. The consequences include poor traffic flow in and out of the area, air and noise pollution, insufficient and failing infrastructure and residents moving to the suburbs for peace and better returns on their investment in their properties.

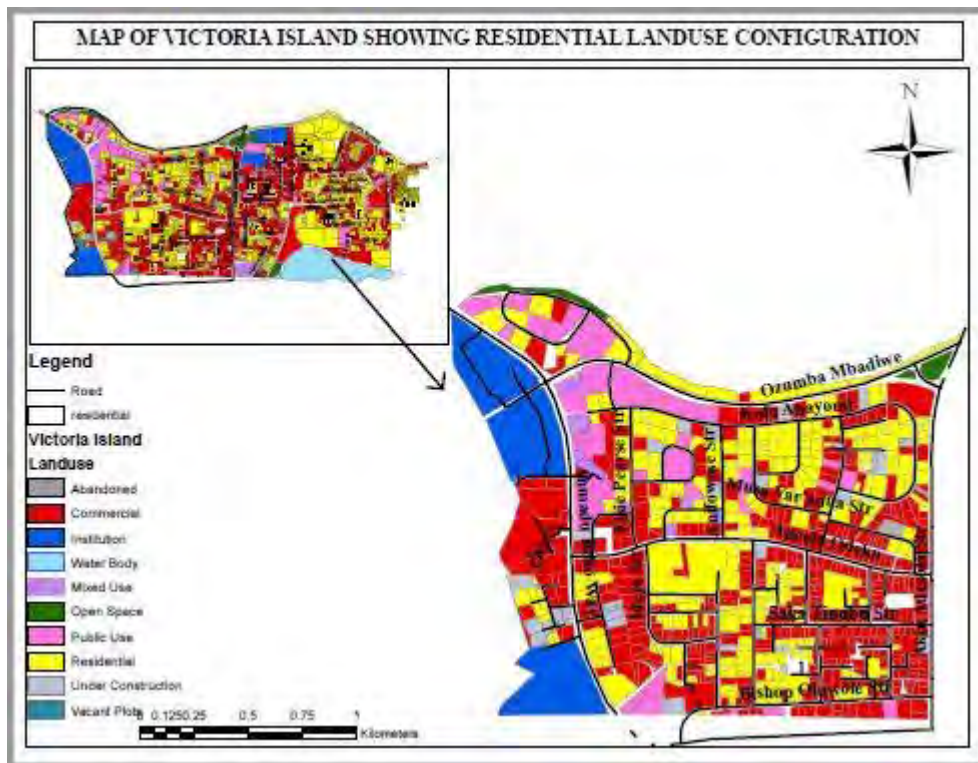
Figs. 9.26 and 9.27 show, observed land use patterns on Victoria Island. Ahmadu Bello Way is on the border with the Atlantic Ocean and hosts important government institutions and commercial activities such as the Bonny Camp military barracks, National Open University, Nigerian Television Authority, the Nigerian Institute for Oceanography and Marine Research, State Liaison Offices, the Federal Palace Hotel, the Silver Bird Galleria, and banks and financial institutions, etc. Ozumba Mbadiwe Street is the border street towards the lagoon and the waterfront is dominated by high-density buildings which are mostly hotels, with many still vacant or under construction. The other side of the street is host to the law school and the 1004 residential estate.



**Fig. 9.26:** Observed land use in selected parts of Victoria Island

Source: Author, 2018





**Fig. 9.27:** Commercial land use in Victoria Island

**Source:** Author, 2018

Adeola Odeku is a mixed-use street hosting diplomatic institutions, hotels, restaurants, show rooms and plazas, shopping complexes, banks and telecommunication offices. Bishop Oluwole, Akin Adesola and Adeyemo Alakija Streets are dedicated to commercial activities. Ademola Adetokunbo Street plays host to the Eko Hotels and Suites, banks and commercial activities and services. It is also the home of the transit village with low residential housing. Saka Tinubu is predominantly given over to telecommunication services, banks, and eateries. Ajose Adeogun is dominated by commercial land use with very few housing developments in between.

Molade Okoya Thomas and Sinari Daranijo Streets consist of detached residential housing converted to commercial use. Daranijo Street still has residential housing, but it competes with invading commercial land use and some houses share premises with commercial users. Plates 9.28 and 9.29 show commercial buildings on Victoria Island.



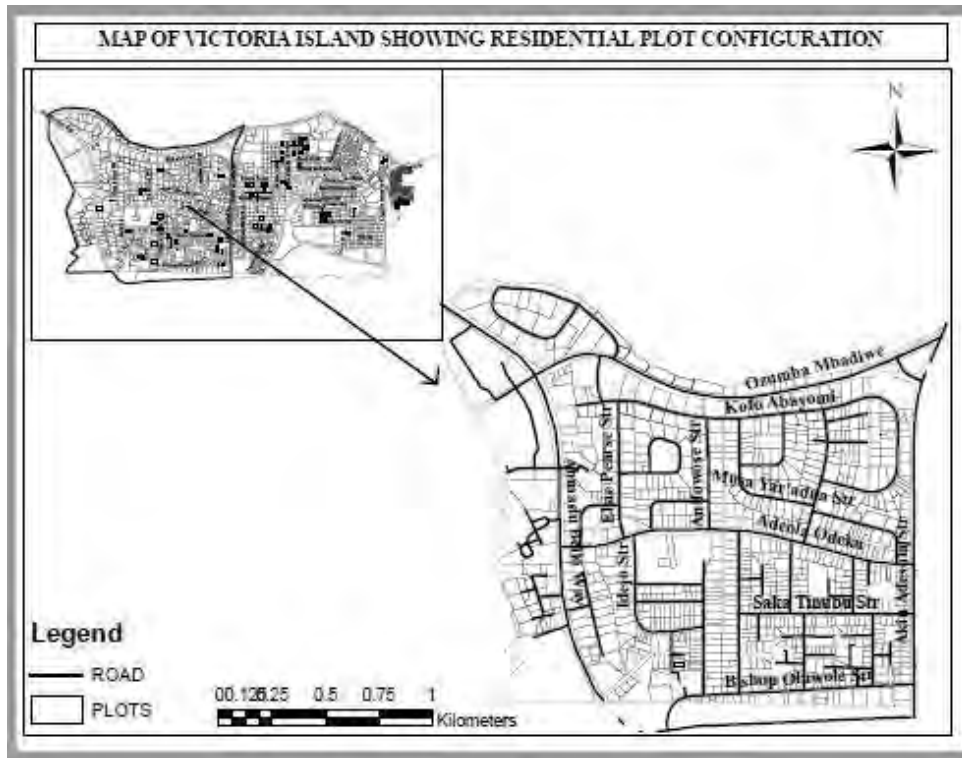
**Plate 9.28:** High Rise Commercial Building on Adeola Odeku Street, Victoria Island  
**Source:** Author, 2018



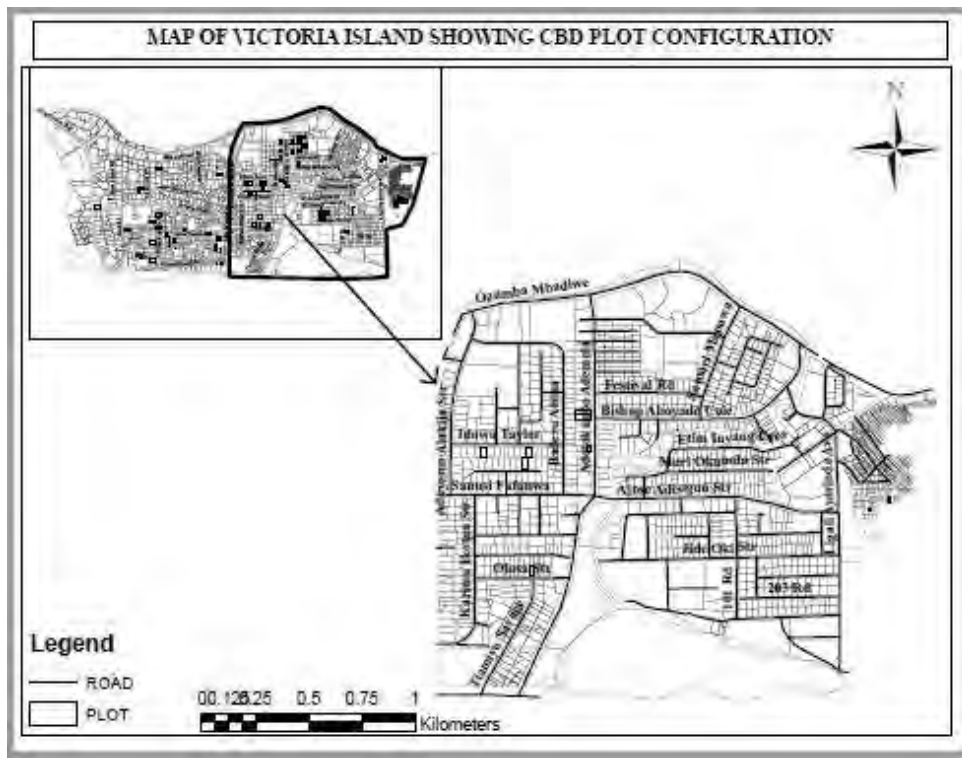
**Plate 9.29:** Commercial buildings on Adeola Odeku, Victoria Island  
**Source:** Author, 2018

### 9.2.3.1 Spatial Configuration: Plots and Building Patterns

Victoria Island was planned on a grid network with regular and consistent plot sizes and shapes. Figs. 9.28 - 9.31 show the plot layout, and development patterns.



**Fig. 9.28:** Plot layout in Victoria Island  
**Source:** Author, 2018



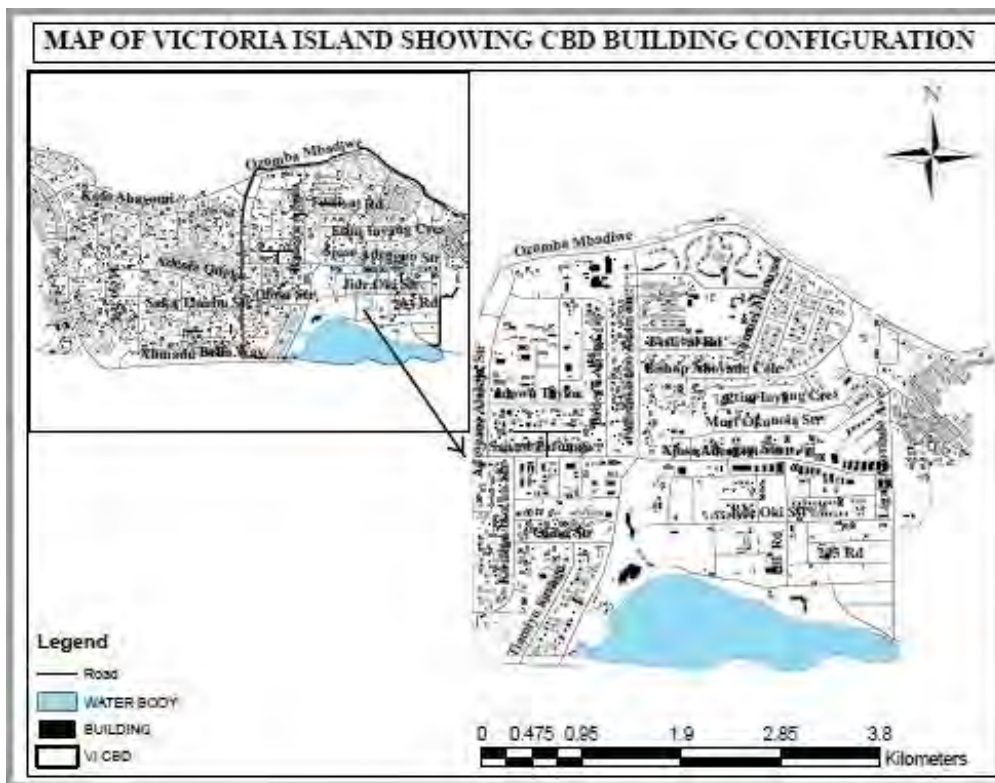
**Fig. 9.29:** Plot layout in selected parts of Victoria Island  
**Source:** Author, 2018





**Fig. 9.30:** Plot layout in selected streets of Victoria Island

Source:  
Author, 2018



**Fig. 9.31:** Development patterns in selected parts of Victoria Island

Source:  
Author, 2018

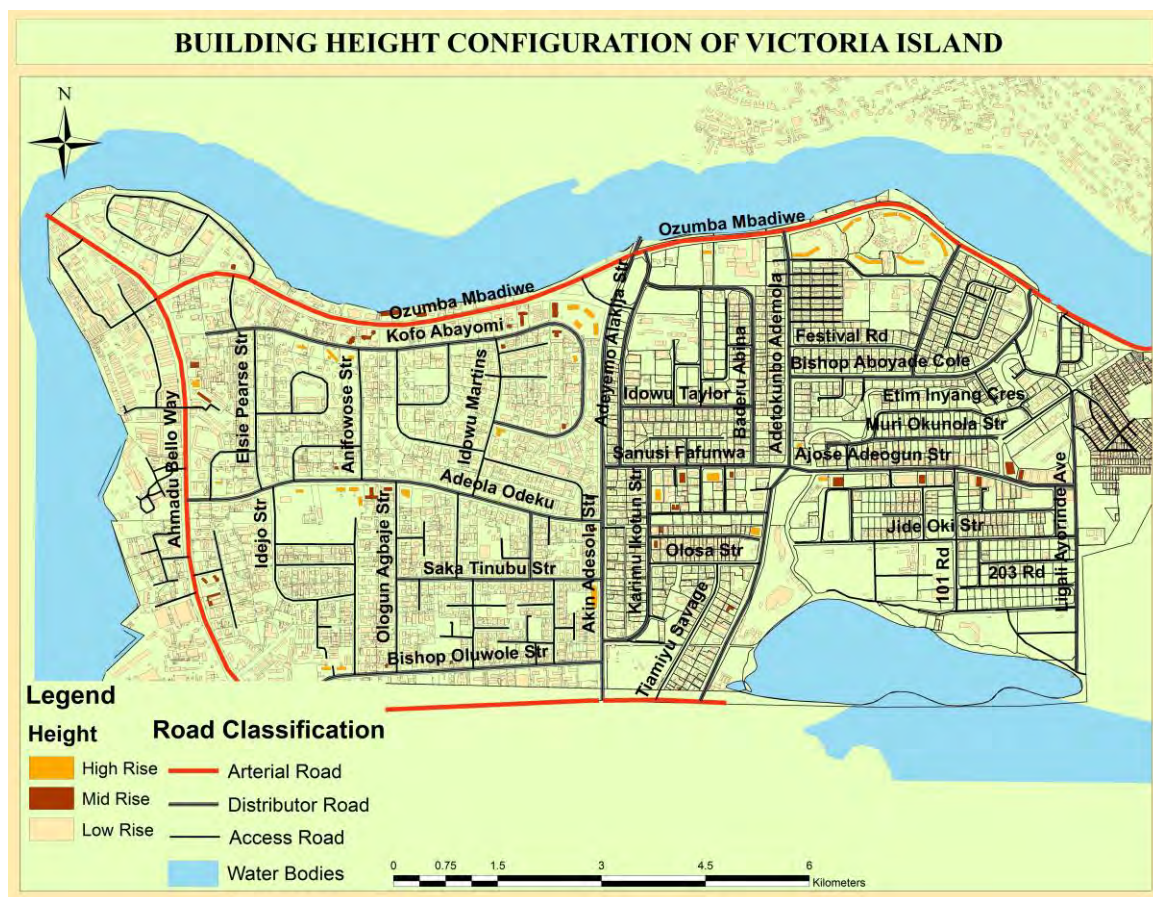
### 9.2.3.2 Building Types, Height, Density and Land Utilization

Table 9.12 shows that 77% of the buildings sampled are low density detached units or blocks of flats, and 7.8% and 11.7% are mid-rise and high-rise buildings, respectively. Plates 9.30-9.31 show the varying housing densities and types of buildings on the Island. Victoria Island is exclusively a low density residential area with 1-4 and 40 dwelling units per plot and ha, respectively. Based on a household size of six, this implies that about 240 persons are housed per ha. However, new residential developments are springing up in some parts of the Island, although without commensurate facilities. Fig 9.32 shows building heights on Victoria Island.

**Table 9.12: Building heights observed on selected streets in Victoria Island**

ID	Height	No. of Buildings	Percentage
1	Low Rise	496	77.3
2	Mid Rise	50	7.8
3	High Rise	75	11.7
4	Under Constriction	17	2.6
5	Open Space	4	0.6
Total		642	100

Source: Author, 2018



**Fig. 9.32: Building Heights in Victoria Island**

Source: Author, 2018





**Plate 9.30:** High-density residential development

**Source:** Author, 2018



**Plate 9.31:** Aerial view of Kofu Abayomi Street

**Source:** Author, 2018

### 9.2.3.3 The Road Network Infrastructure and Carrying Capacity

Fig 9.33 shows the major arterial road linking Victoria Island to the CBD and the Lekki-Epe settlements. Ahmadu Bello Way, and Adeola Odeku, Adetokunbo Ademola and Adeyemo Alakija Streets are the distributor collector roads. Other local roads provide access to the blocks and neighbourhoods. The prevalence of closed roads indicates the initial predominantly residential land use.



Fig. 9.33: Road Network in Victoria Island  
Source: Author, 2018

### 9.2.3.4 Environmental quality and the Condition of Buildings

With a score of 20.7 (47%), the environmental quality of Victoria Island is almost average. Its buildings are in good condition, although with low variety. Open spaces are hardly found, except for the Ajose Adeogun traffic circle and Muri Okunola Park in Ozumba Mbadiwe Avenue. Drainage is poorly connected and, in some cases, discontinuous, making the island susceptible to flooding. The survey revealed that most drains are poorly maintained and are blocked by refuse which impedes the free flow of storm water. The blocked channels fail



with the slightest rainfall resulting in flooding which further complicates the heavy traffic and activities. On-street parking was observed on many streets due to insufficient parking facilities. It was also observed that non-motorised networks were not provided. Pedestrian and cyclic lanes are not integrated into transport lines. Plates 9.32-9.37 show the environmental attributes of Victoria Island.

**Table 9.13: Means of scores allocated to urban features in Victoria Island**

City Elements	Independent Mean Scores			SD Of Mean Scores	$\Sigma$ Mean Score	Mean	Exp Mean	SD of Mean Scores & Exp. Mean
Housing Variety	1.00	1.45	1.00	0.26	3.45	1.15	4	2.02
Condition of buildings	3.55	4.00	3.82	0.23	11.36	3.79	4	0.15
Order, harmony	3.00	2.27	2.45	0.38	7.73	2.58	4	1.00
Open Spaces	1.18	1.09	1.27	0.09	3.55	1.18	4	1.99
Trees, Parks and Gardens	1.00	1.00	1.00	0.00	3.00	1.00	4	2.12
Sanitation	2.00	2.27	2.18	0.14	6.45	2.15	4	1.31
Condition of drainage	2.09	2.00	2.45	0.24	6.55	2.18	4	1.29
Ped/ non-motorised Fac.	1.45	1.18	1.36	0.14	4.00	1.33	4	1.89
Condition of Road network	2.82	2.91	2.82	0.05	8.55	2.85	4	0.81
Traffic Flow	1.55	1.64	1.73	0.09	4.91	1.64	4	1.67
Parking Structure	1.18	1.27	1.18	0.05	3.64	1.21	4	1.97
Total	20.82	21.09	21.27	0.23	63.18	21.06	44	16.22



**Plate 9.32: Poor Setbacks from Roads on Ahmadu Bello Way**  
**Source: Author, 2018**



**Plate 9.33:** Informal Trade on the Setback and Vehicles Parking over Drainage

**Source:** Author, 2018



**Plate 9.34:** Unsafe pedestrian paths over open drainage

**Source:** Author, 2018





**Plate 9.35:** Evolving high-rise development in Victoria Island

**Source:** Author, 2018



**Plate 9.36:** A blocked open drain in Victoria Island

**Source:** Author, 2018



**Plate 9.37:** Poorly constructed and maintained drainage on Ahmadu Bello Way, Victoria Island

**Source:** Author, 2018

### 9.3 Findings and Comparative Analysis of Case Study Areas

The three case studies areas differ in terms of size, functions and form. Lagos Island is the CBD; a high-density, low-medium income residential and commercial land use area. Apapa is a medium-income port city and Victoria Island is devoted to residential land use exclusively for the upper class. Table 9.14 presents a summary of the building uses observed in the three case study areas. Lagos Island provides residential and commercial uses in unplanned proportions; 27.8% and 51% of observed buildings are commercial and mixed uses, respectively. These buildings were originally planned and built for residential use; hence, the dominant commercial use interwoven with residential use in congested environments with failing carrying capacity. This also impacts on the vitality of the city. Some parts of the CBD are completely shut down after the business of the day.

In Apapa, it was observed that residential land use constitutes 62%; and commercial and industrial land uses 12% and 10.8%, respectively. Victoria Island, which was planned for residential use, is now dominated by commercial land use; 56% of 642 buildings are used for commercial activities, with negative impacts on facilities, infrastructure and the quality of life.

**Table 9.14: Comparative Analysis of Building use observed**

OID	Land Use	LAGOS ISLAND		APAPA		VICTORIA ISLAND	
		No. of buildings	%	No. of buildings	%	No. of buildings	%
	Commercial	280	27.8	107	12.0	359	56
0	Industrial	-	-	97	10.8	-	-
1	Institution/Public Use	96	9.6	2	0.2	11	1.7
	Mixed Use	515	51.3	132	14.7	69	10.7
	Open space	30	2.8	2	0.2	3	0.46
2	Residential	77	7.7	557	62.0	177	27.5
6	Under construction Vacant	6	0.6	-	-	23	3.5
TOTAL		1004	100	897	100	642	100

Source: Author, 2018

The study areas have varied architectural styles, and building shapes and sizes. Spatial organization is not consistent and lacks variety, a pattern and unity. Some parts of the CBD are characterized by high-rise blocks of flats i.e. 9 floors and above (on Marina and Broad

Streets), while others are low-rise (1-4 floors) buildings that lack basic amenities with very poor or failing sewage systems. It was observed that the Apapa port city is dominated by detached low-density (1-4 floors) buildings; bungalows and duplexes. Victoria Island has the most high-rise residential buildings amongst the three areas, but they are not evenly distributed and low-density buildings predominate, with detached units accounting for more than 70% of the buildings sampled. This clearly indicates poor land utilization and inadequate incorporation of the city's functions and growing population into urban plans.

**Table 9.15: Comparative Analysis of Building Types observed**

OID	Bdg_Height	Lagos Island		Apapa		Victoria Island	
		No. of buildings	%	No. of buildings	%	No. of buildings	%
1	Low Rise	846	84.3	882	98.3	496	77.3
2	Mid Rise	66	6.6	10	1.1	50	7.8
3	High Rise	56	5.6	3	0.3	75	11.7
	Open space / Under construction and others	36	3.6	2	0.2	21	3.2
	Total	1004	100	897	100	642	100

**Source:** Author, 2018

Table 9.16 presents a summary of the environmental attributes of the three study areas. From an expected cumulative score of 44, the scores of 13.92, 17.19 and 21.06 reveal the poor state of the environment in Lagos. The buildings in Lagos Island are in deplorable condition with defective structures endangering lives. These houses are built without consideration of plot coverage, setbacks, safety, sanitation and airflow and are subject to collapse. Conditions are not much different in Apapa with a score of 17.7. With a score of 21.06, Victoria Island has a better environment. Given that it is an upper class residential area that incorporates commercial land use, it offers more facilities and a better environment than Lagos Island and Apapa. However, it still lacks the attributes of sustainable places. There is poor housing variety due to the high cost of rent and land, especially land that is being reclaimed.

**Table 9.16: Comparative Analysis of the environmental attributes of the Case Study Areas**

ATTRIBUTES	Lagos Island		Apapa		Victoria Island	
	Mean	SD of Mean Scores & Exp. Mean	Mean	SD of Mean Scores & Exp. Mean	Mean	SD of Mean Scores & Exp. Mean
Housing Variety	1.03	2.10	2.02	1.40	1.15	2.02
Condition of buildings	1.51	1.76	2.88	0.79	3.79	0.15
Order, harmony	1.21	1.97	1.63	1.68	2.58	1.00
Open Spaces	1.00	2.12	1.00	2.12	1.18	1.99
Trees, Parks and Gardens	1.00	2.12	1.17	2.00	1.00	2.12
Sanitation	1.23	1.96	1.48	1.78	2.15	1.31
Condition of drainage	1.38	1.85	1.52	1.75	2.18	1.29
Pedestrian / non-motorised Fac.	1.00	2.12	1.00	2.12	1.33	1.89
Condition of Road network	1.97	1.44	1.90	1.48	2.85	0.81
Traffic Flow	1.33	1.89	1.48	1.78	1.64	1.67
Parking Structure	1.28	1.92	1.13	2.03	1.21	1.97
TOTAL	13.95	21.25	17.19	18.96	21.06	16.22

Source: Author, 2018

All three study areas violate building codes and set back requirements, with negative impacts on the use of space. This reflects poor enforcement of regulations. The stipulated setback for airspaces between buildings is not adhered to; hence, the building lines are not uniform and adequate provision is not made for future development. The setbacks requirement of 6 meters for road setbacks and 3 meters between buildings are violated by almost every building.

Other observed attributes of the city include multiple properties on one plot especially on Lagos Island, resulting in inadequate passage between buildings in some cases. Furthermore, buildings initially approved as low-rise developments have been extended due to property owners' quest to gain more income from rents. These developments are not planned and are thus not integrated, resulting in a lack of order. They are also difficult to reach during emergencies and for maintenance.

Poor sanitation is evident in all three study areas; drainage networks are littered and blocked and are thus incapable of channelling rain water, causing floods. Heavy refuse generation by the markets in the CBD further compounds these problems.

Landmarks are essential aspects of the urban form; they provide meeting places and small-scale features that enhance the legibility of urban spaces. They include street furniture, public/open spaces, and vehicular and pedestrian systems. Pedestrian facilities include sidewalks, landscaping such as trees and flowers, street furniture, lighting, road crossing signs, etc. They contribute to the scenic value and sense of place in addition to ensuring safety and convenience. They make the streets more appealing to pedestrians and create a sense of inclusiveness. It was observed that Lagos streets are not pedestrian and cyclist-friendly as no consideration was given to non-motorized transport in the construction of major roads in the case study areas. There are no pedestrianized streets that are blocked to vehicular traffic. Footpaths mainly consist of paved tops of drainage systems with no distinctive plan or dedicated spaces for sidewalks.

The study area has various hierarchies and forms of roads, including primary and secondary networks, and major arterial, collector/distributor and local access roads. They have varying capacity and differ in their ability to ensure access and mobility and define city forms. Connectivity is defined by the quantity and quality of connections in the streets network. In Lagos Island, which is based on indigenous development, it is mostly irregular and in some cases curvilinear which is not favourable to traffic flow. Victoria Island and Apapa are laid out on a grid network and hence have direct connections and multiple routes which produce high connectivity. However, traffic flow is hampered due to overload. The environment is in a state of disharmony, characterized by very poor accessibility and movement options brought about by poor spatial arrangements and mismatched uses.

There is a dearth of parking and most of the developments observed lack adequate parking facilities. The poor mix of land uses has made shared parking difficult. This is because the whole city is busy at the same time and goes to sleep at night. There are thus minimal opportunities to use the facilities at different times. Indiscriminate on-street parking is the result. Failure to comply with the regulations pertaining to plot coverage and parking facilities for various land uses exacerbates the situation. High traffic volumes call for multi-level parking and possibly restricting vehicular entrance to the CBD to avoid the catastrophic traffic jams and chaos on the Island. The places in the study areas are not attractive, with many lost places and few or no open spaces for leisure or recreation. They therefore do not support quality urban living. The city lacks planned public open spaces; those identified are



not planned, but are lost spaces with no profitable activities. The absence of open spaces in the city indicates that the spaces provided in the urban plans for these uses have been converted to other uses. The quest for maximum utilization of land by investors and developers led to overuse and neglect of the naturally occurring landscape, water bodies and wetlands. The city is devoid of green areas, thus exposing it to pollution. While the previous Lagos government embarked on tree planting, this was not very effective. Apart from being landscaping elements, trees are places of significance; their canopies provide shade that serve as playgrounds, meeting places and markets.

The study identified the following problems in varying intensities:

- Inadequate land utilization
- Lost spaces
- Deteriorated buildings
- Poor state of the environment and infrastructure
- Poor spacing
- Unsanitary and unhealthy environment
- Building congestion
- Traffic congestion
- Street trading
- No open spaces and gardens
- Blocked drainage
- Noise and air pollution
- Illegal conversions

#### **9.4 Conclusion**

The identified problems reveal the depletion of residential land use in the inner city and are indications that the study areas are deteriorating into slums. Poor physical planning and urban management resulted in increased land consumption and spatial disharmony. This is evident in sprawling development into the suburbs and hence continuous expansion of the metropolis. Rural areas are taken over by outward illegal development with no form, order or organized direction; most of this development is unplanned and haphazard with insufficient provision for basic facilities and infrastructure, especially housing for the growing population.

The principles of urban design are very important to spatial development as they help to achieve good urban forms. A poorly built city with no consideration for these elements will not be legible, fit, and accessible and lacks vitality. It is evident that development pattern of the city is not in harmony with the principles of design.

## CHAPTER TEN

### ANALYSIS AND DISCUSSION OF RESULTS

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#### **10.0 Introduction**

The built environment is guided by planning policies and development plans; the outcome is determined by the effectiveness of control mechanisms, enforcement and compliance levels. This chapter discussed the responses from the interviews and the results from the questionnaires. It analyses planning implementation, control mechanisms, enforcement and compliance. This will help to establish the factors responsible for the way the city developed.

#### **10.1 Analysis of Information from Agencies of the Ministry of Physical Planning and Urban Development (MPP&UD) in Lagos State and the Study Areas**

The Ministry of Physical Planning and Urban Development (MPP&UD) oversees and functions through three units provided by the 2010 Law, namely, the Lagos State Physical Planning Permit Agency (LASPPPA), Lagos State Building Control Agency (LASBCA) and the Lagos State Urban Renewal Authority (LASURA) that are responsible for planning the city of Lagos. To facilitate effective coverage of planning activities, these agencies have district offices in all LGAs in the state.

Interviews were conducted with key informants (very senior and experienced personnel). The responses are summarised and discussed thematically based on functions, procedures for approvals, change of use, monitoring, compliance, enforcement and operational challenges. Six planners were interviewed, three from LASPPPA, two from LABSCA and one from LASURA.

##### **10.1.1 Administration and Functions of the Ministry and Agencies**

Part II of the 2010 planning law provides for the establishment of LASPPPA. It is responsible for drafting all physical development policy; while it is not superior to the other planning agencies, it initiates, evaluates, reviews and implements development plans and regulations. It prepares and obtains approval<sup>5</sup> of physical development plans<sup>6</sup> in consultation with stakeholders. With a vision to develop a vibrant and sustainable megacity, LASPPPA is

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<sup>5</sup>By the Commissioner who is the chief administrative officer of the Ministry

<sup>6</sup>District, Town and Local Plans provide for activity classification (zoning), buildings, roads setbacks, density, etc.

primarily involved in processing and issuing all planning permits in the State. While it has discretion to enforce any other regulations that will help to achieve its objectives and functions under its jurisdiction, the agency is mandated to monitor development for compliance with approved and operative development plans, approval orders and other planning requirements. LASPPPA is also mandated to prepare, publish and archive all applications and relevant documents on an annual basis, including planning permits or applications granted, rejected or withdrawn in the State Official Gazette.

To fulfil these functions, district and local Planning Permit Offices have been established within each LGA. The Agency collaborates with other public agencies and departments to enforce compliance with development plans and regulations.

Part III of the 2010 planning law provides for the establishment of LASBCA. It ensures compliance by monitoring and enforcing the provisions of approved and operative development plans in respect of “heights (FAR) and floor coverage (PR), setbacks, connection to drainage, provision of parking, etc.”

The agency is predominantly responsible for the supervision of building construction and control. It carries out physical observation of buildings to identify deterioration and/or distressed buildings for demolition in order to avoid building collapse and the ensuing consequences. Like the permit authority, LASBCA is mandated to archive all building construction and related records. The agency provides building services and material and structural assessment and testing, for safety and general liveability. In support of its functions, provision is made for research on building construction, maintenance and control and public awareness campaigns.

In collaboration with LASPPPA, LASBCA carries out routine inspections of on-going building works at different stages of development. It certifies development that complies with the standards and conditions of permits and enforces the removal of illegal and non-conforming buildings. LASBCA is empowered to demolish any substandard or defective buildings. The consequences of contravention include demolition, and fines of different amounts depending on the type of contravention and/or community service.

LASURA’s activities encompass “settlements regeneration and formulation of urban renewal policies. LASURA identifies areas in need of regeneration and revitalization, conducts urban renewal and holds land on behalf of the state government”. It develops the parameters to measure dilapidation, carries out surveys and compiles planning/feasibility reports. The

agency provides for carrying capacity and urban infrastructure. Its activities include research, formulation of renewal development plans and interventions to promote urban revitalization. Prior to adopting urban renewal strategies, an inspection is carried out of the buildings, facilities and environment to determine their condition and establish the most appropriate approach. Whether rehabilitation or outright renewal is recommended, the community is consulted. LASURA collaborates with stakeholders, communities, other relevant agencies such as LASPPPA and LASBCA and the World Bank for renewal programmes in the city.

### **10.1.2 Urban Planning and development approval**

Development approval is mandatory in sound urban planning; hence, both public and private developers should obtain a development permit before commencing construction. A development that has not been approved contravenes the law, with consequent penalties. Approval is conditional on the developer fulfilling the requirements stipulated in laws and planning regulations. Authorization is required for any activity defined as “development” by the law; see table 10.1.

**Table 10.1: Developments that require approval under the 2010 Planning Law**

- Use and development of land;
- Land use and structural change;
- Alteration of an approved development plan;
- Renovation of existing approved building structures;
- Demolition of the existing structure by the owner/developer.

**Source:** Author, 2018

All forms of development must conform to the provisions set out in the plan; the law thus ensures that applications for permits comply with the Operative Development Plan. The different requirements for different kinds of development must be adhered to by all developers and the authority is empowered to approve or reject an application. The requirements for development permits are outlined in Table 10.2. They include a clear description of the proposed development, its uses and its impacts on other buildings and the Neighbourhood in which it is situated in relation to other existing or proposed developments.

**Table 10.2: Requirements for Granting a Development Permit**

S/N	PROPOSED DEVELOPMENT	REQUIREMENTS	CLEARANCE REQUIRED (As may be necessary)
1.	1 floor (Ground) -2 floor	<p>5 sets of Architectural Drawing.; 5 sets of Structural Drawing, i, Letter of Supervision ii, Calculation Sheets iii, Letter of structural stability in case of existing structures.</p> <ul style="list-style-type: none"> <li>• Mechanical and Electrical Drawings in case of Public Institutions. All drawings must be prepared by registered professionals</li> <li>• Evidence of Land Ownership/Title Document.</li> <li>• Evidence of payment of Applicant Tax.</li> <li>• Receipts of payment of Statutory Fees.</li> <li>• 1 Sun print copy of Survey Plan or Beacon Sheet.</li> <li>• Submission of Environmental Impact Assessment Report in case of Commercial, Industrial, Institutional, POW, Residential of more than eight (8) family unit or any other Public Institutions Developments.</li> </ul>	<ul style="list-style-type: none"> <li>• Land Use Allocation Directorate and Land Services Department.</li> <li>• Ministry of Transportation (Transportation Plan)</li> <li>• Ministry of Environment (drainage alignment, gorge, flood plains, river/water bodies, lagoon, shoreline clearance etc.)</li> <li>• Lagos State Urban Renewal Authority Lagos State Surveyor General's office</li> <li>• New Towns Development Authority.</li> <li>• Lagos State Revenue Services.</li> </ul>
2.	3-4 floors	<ul style="list-style-type: none"> <li>• 5 sets of Architectural Drawings</li> <li>• 5 sets of Structural Drawing, i, Letter of Supervision ii, Calculation Sheets iii, Letter of structural stability in case of existing structures.</li> <li>• Mechanical and Electrical Drawings in case of Public Institutions. All drawings must be prepared by registered professionals</li> <li>• Evidence of Land Ownership/Title Document.</li> <li>• Evidence of payment of Applicant Tax.</li> <li>• Receipts of payment of Statutory Fees.</li> <li>• 1 Sun print copy of Survey Plan or Beacon Sheet.</li> <li>• Soil Investigation Report</li> <li>• Insurance Certificate</li> <li>• Submission of Environmental Impact Assessment Report in case of Commercial, Industrial, Institutional, POW, Residential of more than eight (8) family unit or any other Public Institutions Developments.</li> </ul>	<ul style="list-style-type: none"> <li>• Land Use Allocation Directorate and Land Services Department.</li> <li>• Ministry of Transportation (Metro Line Project)</li> <li>• Ministry of Environment (drainage alignment, gorge, flood plains, river/water bodies, lagoon, shoreline clearance etc.)</li> <li>• Lagos State Urban Renewal Authority</li> <li>• Lagos State Surveyor General's Office.</li> <li>• New Towns Development Authority.</li> <li>• Lagos State Revenue Services.</li> </ul>

### Requirements for Granting a Development Permit continued

3.	5-6 floors	<ul style="list-style-type: none"> <li>• 5 sets of Architectural Drawings</li> <li>• 5 sets of Structural Drawing,               <ul style="list-style-type: none"> <li>i, Letter of Supervision</li> <li>ii, Calculation Sheets</li> <li>iii, Letter of structural stability in case of existing structures.</li> </ul> </li> <li>• Mechanical and Electrical Drawings in case of Public Institutions. All drawings must be prepared by registered professionals</li> <li>• Evidence of Land Ownership/Title Document.</li> <li>• Evidence of payment of Applicant Tax.</li> <li>• Receipts of payment of Statutory Fees.</li> <li>• 1 Sun print copy of Survey Plan or Beacon Sheet.</li> <li>• Soil Investigation Report</li> <li>• Insurance Certificate</li> <li>• Submission of Environmental Impact Assessment Report in case of Commercial, Industrial, Institutional, POW, Residential of more than eight (8) family unit or any other Public Institutions Developments.</li> </ul>	<ul style="list-style-type: none"> <li>• Land Use Allocation Directorate and Land Services Department.</li> <li>• Ministry of Transportation (Transportation Plan)</li> <li>• Ministry of Environment (drainage alignment, gorge, flood plains, river/water bodies, lagoon, shoreline clearance etc.)</li> <li>• Lagos State Urban Renewal Authority</li> <li>• Lagos State Surveyor General's Office.</li> <li>• New Towns Development Authority.</li> <li>• Lagos State Revenue Services.</li> </ul>
4.	7 floors and above	<ul style="list-style-type: none"> <li>• 5 sets of Architectural Drawings</li> <li>• 5 sets of Structural Drawing,               <ul style="list-style-type: none"> <li>i, Letter of Supervision</li> <li>ii, Calculation Sheets</li> <li>iii, Letter of structural stability in case of existing structures.</li> </ul> </li> <li>• Mechanical and Electrical Drawings in case of Public Institutions. All drawings must be prepared by registered professionals</li> <li>• Evidence of Land Ownership / Title Document.</li> <li>• Evidence of payment of Applicant Tax.</li> <li>• Receipts of payment of Statutory Fees.</li> <li>• 1 Sun print copy of Survey Plan or Beacon Sheet.</li> <li>• Soil Investigation Report</li> <li>• Insurance Certificate</li> <li>• Submission of Environmental Impact Assessment Report in case of Commercial, Industrial, Institutional, POW, Residential of more than eight (8) family unit or any other Public Institutions Developments.</li> </ul>	<ul style="list-style-type: none"> <li>• Land Use Allocation Directorate and Land Services Department.</li> <li>• Ministry of Transportation (Transportation Plan)</li> <li>• Ministry of Environment (Environmental Management Plan)</li> <li>• Lagos State Urban Renewal Authority</li> <li>• Lagos State Surveyor General's Office.</li> <li>• New Towns Development Authority.</li> <li>• Lagos State Revenue Services</li> </ul>

Source: Ministry of Physical Planning, 2016

A building plan prepared by a professional town planner must be submitted that includes information on the location and the land area.

Applications must include provision for accessibility, and the safety and convenience of both the physically fit and unfit in all building uses. For buildings above two floors, the permit application should include an insurance policy, a detailed technical report and impact analysis. The application should also show that the required facilities will be provided. In granting a planning permit, LASPPPA takes natural landscapes into account, including the conservation and planting of trees or greenery on the development site.

The maximum period for processing permits is three months from the date of submission. Approval may be delayed if the developer is unable to meet the requirements. The decision is communicated to the applicant in writing. The application may be granted or denied and, in some cases,, approval can cancelled due to several reasons. The Permit Authority may reject an application for the following reasons:

- the application is not in accordance with the Operative Development Plan;
- in the opinion of the Planning Permit Authority, the proposed development is likely to cause nuisance or have major impact which cannot be adequately mitigated on the environment, facilities, or inhabitants of the community or in the public interests; or
- the development is not in accordance with any other condition as may be specified by Regulations made under this Law.

A planning permit becomes invalid where development has not commenced within two years of it being granted. Where a developer fails to commence development within two years, the planning permit is subject to revalidation by the Planning Permit Authority on payment of the prescribed fees provided that the Operative Development Plan has not been amended, varied or altered.

A planning permit may be revoked in part or whole for any of the following reasons:

- When the development and uses for which the planning permit was granted are no longer suitable;
- When the site of an approved development is needed for a superseding public purpose; this is made possible by the Land Use Act of 1978, which vests all land in the Governor who can take decisions for the good of the public;
- The planning permit was obtained fraudulently;



- When the developer or owner of the planning permit has exceeded the development approved or has not conformed to the terms of the permit;
- The permitted development or use has been modified, altered, varied, added to or renovated without permit; or
- The permitted development has not complied with building control standards.

In case of contravention, an enforcement notice is served and becomes effective immediately. Failure to comply with the terms of an enforcement notice is an offence and liable on conviction to a fine.

While records of building plan applications are collated and gazetted, there is poor documentation and no up to date record of the city's development status. Furthermore, the law prohibiting development without approval is poorly enforced.

### **10.1.3 Enforcement of Development Control**

Implementation and enforcement are carried out concurrently by all three agencies in line with their functions and jurisdiction. The relevant agency may serve an enforcement notice on the owner (private or public) of a development (regardless of use) commenced without a planning permit, or when the building constitutes a danger to the occupier or the public or is in a deteriorated condition for rehabilitation.

“An enforcement notice may be issued under subsection (1) of this Section, notwithstanding that the unauthorized development; renovation, alteration, repair or addition took place before the commencement of this Law”. This implies that an enforcement notice can be served on any building in contravention of the development plan irrespective of when it was built. If it was duly permitted, the owner will be compensated or relocated when an upgrade or outright demolition is required, respectively.

Enforcement notices vary from precautionary, to discontinuance and demolition. This may occur in different forms and at different levels and stages of the work depending on the scope of contravention. The developer may be instructed to alter the development to conform to the regulations, discontinue building or demolish the structure. A developer may be required to obtain a planning permit or building control authorization or alter the structure to conform to building regulations within ninety (90) days of the Contravention Notice.

Enforcement notices include one or more of the following: Contravention Notice, Stop Work Order, Quit Notice, Seal-up Notice, Regularization Notice and Demolition Notice.

A stop work notice is issued pending the developer producing the necessary documents and if the development is within the scope of the plan. A demolition notice is served on any unauthorized development after the issuance of appropriate notices. Penalties for non-compliance vary from demolition, to charges, jail terms and total forfeiture of the property to the government.

The Lagos State Ministry and its agencies work with the land use planning and control tools backed by policy and law; these include various levels of plans, satellite images and socio-economic data, etc. Other tools include hardware, computers, scanners, printers, and patrol vehicles. This enables development to be monitored for compliance and prosecution of defaulters.

#### **10.1.4 Competence, Training and Data**

The agencies are equipped with professionals with “cognate experience” as specified by the 2010 Law. “The General Managers who oversee the affairs of these agencies are qualified and registered town planners with many years (15 years) professional experience.”

The Building Control Agency is headed by a general manager appointed by the Governor, a professional Architect, Civil/Structural Engineer or Builder with not less than fifteen (15) years cognate post professional registration experience. The manager oversees the general administration and execution of the functions assigned to the agency.

LASURA is headed by a General Manager, a registered town planner with not less than fifteen (15) years cognate post professional registration experience. The General Manager appointed by the Governor is the Chief Executive Officer that is responsible for general administration and execution of the functions conferred on the agency.

This implies that those at the helm of planning affairs understand their roles, can interpret the law and are equipped to implement them in the development process.

Through its various agencies, the ministry organizes staff development programs within and outside the organization on the Geographic Information System and Information and Communication Technology. “Periodic attendance of conferences, seminar and workshop is encouraged for staff development”. “Notable amongst them is the NITP/TOPREC Mandatory Continuing Professional Development Program (MCPDP) organized to discourse the trend in physical planning and administration”.

### **10.1.5 Operational Challenges; Compliance, Enforcement and Monitoring**

The ministry is responsible for determining density in the city. It believes that land is not optimally utilized even though there are many approaches to achieve maximum development. Funding for the authority is mainly from the state's budgetary allocation; planning is a round-the-clock activity that is capital intensive. Funding is required to remunerate field workers and provide for their mobility and security. Financial constraints have negatively affected the functioning of the agency, including monitoring, training, and access to the necessary database support systems and software.

The interviews revealed several challenges to the planning process; these are detailed in Table 10.3. They include cultural influences and claims of a right to the city. It is assumed that a city can accommodate all those that choose to live and work within it, hence, the ever-increasing squatter settlements. Furthermore, the regulations that prohibit certain activities in some locations and spatial density are often breached by land owners who feel that they have a right to develop their property as they wish. Deviations from development plans hamper planning implementation and promote spatial disharmony.

The informants also noted that developers disregard development policies and that the public perceives zoning laws as an unnecessary obstacle to development. They expressed concern about the city's inability to meet the housing needs of the growing population. Coupled with the scarcity of land within the city, this has led in the outward spread of private housing projects which apart from resulting in unsustainable land use, has created service delivery and infrastructure challenges. Urban renewal programmes are mainly delayed due to legal action by stakeholders and communities, especially those affected by the projects. Matters are complicated by titles to land and approval status. The key informants noted that, while the state agencies are working very hard, they have yet to achieve a sustainable city. They also pointed to:

- Lack of political will;
- Government interference in the administration of the built environment and political interference in the planning and development process, with approval often favouring urban elites and investors;
- The lack of planning tools and poor awareness programmes;
- Delays in planning approvals;
- Developers that do not comply with the plan after having obtained development

approval;

- Sabotage by influential individuals that undermine the activities of agencies; this is obvious in cases of contravention of regulations and collapse of buildings.

**Table 10.3: Summary of agencies' functions, and development procedures and criteria**

FUNCTION	PROCEDURE
Issuing Development Permits	<ul style="list-style-type: none"><li>✓ Ensure that permits are issued within 30 working days of application provided all relevant documents are annexed to the application and appropriate payments are made to designated banks, depending on the type of development.</li></ul> <p>Upon issuance of a development permit:</p>
Development Control and Removal of Illegal and Distressed Structures	<ul style="list-style-type: none"><li>Monitor construction work in stages to ensure compliance with the permit</li><li>✓ Issue a Certificate of Completion and fitness for habitation.</li><li>✓ On receipt of complaints or monitored observation:<ul style="list-style-type: none"><li>✓ Promptly investigate the development by undertaking an integrity test on the distressed structure and remove same where necessary;</li><li>✓ The result of the integrity test shall be made available within 24 hours of its conduct;</li><li>✓ Requisite notices will be served on illegal structures and the occupants i. e., 2 days Contravention Notice; 7 days Demolition Notice and upon approval to demolish, demolition and removal within 2 days.</li></ul></li></ul>
Urban Renewal and Regeneration	<ul style="list-style-type: none"><li>✓ Monitor and identify areas qualified for upgrading;</li><li>✓ Coordinate the relocation of activities with a negative impact on urban based economic activities;</li></ul>
Layout Plans	<p>All land holdings, both public and private, of one (1) hectare and above must prepare and obtain approval for layout plans.</p> <ul style="list-style-type: none"><li>✓ Provide development guides to create an orderly and balanced environment with provision of basic facilities and utilities;</li><li>✓ Prevent the development of shanties and slums in the emerging megacity.</li></ul>

Right of Way	<p>Adequate setbacks of 30 meters on the right and left sides of the road;</p> <ul style="list-style-type: none"> <li>✓ Structures placed within these dimensions are deemed to be contraventions and are removed.</li> <li>✓ Compensate victims with verifiable ownership titles in the case of road expansion.</li> </ul>
Master Plans and Model City Plans	<ul style="list-style-type: none"> <li>✓ Provide an adequate infrastructural facilities plan;</li> <li>✓ Co-coordinate various development activities;</li> <li>✓ Create an economic platform to facilitate the inflow of foreign direct investment;</li> <li>✓ Ensure an orderly and harmonious living environment.</li> </ul>

LASPPPA prepares and reviews physical plans and regulations and is responsible for processing and issuing all planning permits which are compulsory for all physical developments in the state.

LASBCA is responsible for enforcing building control regulations. This involves routine inspection of buildings for verification and certification of compliance. While ensuring that development remains within the scope for which approval was granted, it identifies and penalises illegal and distressed developments. Other services include safety checks for the issuance of a certificate of completion and fitness for habitation. The agency has offices in all local areas. It conducts research and keeps records of all activities while collaborating with other agencies to educate the public.

LASURA is empowered to identify and designate places as "Improvement Areas" for rehabilitation. It monitors and identifies deteriorating areas and advises government on renewal activities, then prepares and implements approved revitalization schemes to manage all properties within renewal areas. The law stipulates that the agency uses a procedural strategy, community involvement and public participation before declaring that a place is to be upgraded. Community members should also be involved in the procedure and process of redevelopment. This includes holding community meetings and briefings on the project, and drawing up plans and implementation strategies.

The agency is empowered to demolish buildings completely or partly depending on their

condition. This occurs when a building is sub-standard or in a state of disrepair and poses a threat to the health of occupiers and adjacent buildings; and if there is congestion and poor access and infrastructural and other services in the area.

LASURA has the power to enter into agreements with persons or body corporates to implement improvement plans. A property owner may, however, appeal against the report of the agency within 28 days, after which the order will take effect.

#### **10.1.6 Discourse Analysis**

LASPPPA controls “the process of development; formulates development plans at the local and district levels; sets requirements for permits for all proposed development, it grants approval for development after having met the required standards and conditions”. LASBCA is “responsible for all building control regulations. The agency ensures that developers conform with the development plan and permit issued”

The agencies engage in stakeholder consultations, public awareness and publicity on planning and physical issues. “The public are enlightened on the need for necessary approvals before development and the consequences of illegal development”. “The control agencies also carry out awareness programmes on safety of structures and the need for building control”.

“Urban renewal sometimes involves a lot of inconvenience on the daily lives of people or even requires outright displacement; hence the provision for a counselling committee. The agency makes efforts to inform and carry the residents of the proposed improvement areas along by organizing stakeholder meetings, conducting a needs assessment survey and feasibility study among others”. It informs those affected of the purpose of the proposed improvement and the facilities and benefits that will be derived.

The agencies utilize different data (satellite images and digital data). LASPPPA prepares an annual report on development approvals; these records are archived and published in national newspapers. It is adequately equipped with land use planning and control tools, including various levels of plans, zoning control and model city plans, digital maps, Geographic Information System (GIS), digital cameras, vehicles and office equipment.

Having set out the functions of the agencies involved in development planning and control in

Lagos State, aspects of the environment suggests that few of the policies are properly implemented or that the regulations are deficient and incapable of achieving sustainable development. Alternatively, the agencies and structures are themselves deficient. The city is dominated by buildings that contravene planning regulations and standards and disregard setbacks and space regulations. Several buildings due for renewal were also identified where LASURA should have intervened. The poor state of greening shows obvious disregard for the provision for greening as a prerequisite for a development permit. It would seem that the agencies wait for a disaster, building collapse and outright blight before interventions are set in motion. This is responsible for the muddled and incremental development patterns.

## **10.2 Analysis of information from property owners in the selected case study areas**

A total of 374 questionnaires were administered, 114,105 and 155 in Apapa, Lagos Island and Eti-Osa, respectively. The discussion is based on cross tabulation of the results from all the case study areas.

**Demographic Characteristics of Respondents** - The sample for the study mainly consisted of people above the age of 35. Most of the respondents had basic education with 99.2% having at least primary education. Just under 2% (1.9%) of the respondents had primary education, 15% had secondary education and 82.3% had post-secondary and tertiary education. The majority (92%) of the respondents were employed, with 33.4% either in the informal sector or unemployed; 23.5% self-employed and 9.9% unemployed. The income level determined by employment status was pegged at the country's minimum wage of 18,000 naira.

The majority of the respondents had lived in study area for more than ten years with Lagos Island leading in this category at 92%. A cumulative 88.5% of the respondents had lived in the study area for more than five years. Household size correlated with the findings of the census, with 70.9% of households comprises 3-6 persons and 16.0% and 3.7% made up of 7-9 and more than 9 persons, respectively. Lagos Island had the most households of more than 9 people at 6.7%.



### 10.2.1 Access to Mortgage Facility

Funding is critical for development. The respondents were thus asked if they had access to mortgage facilities to finance their development. Table 10.4 shows, that 38.8% indicated that they had access to a mortgage facility, while, cumulatively, 61.1% had no access. The reasons ranged from poor awareness, to restricted access and difficult requirements. Of the 145 (38.8% of 374) respondents that accessed a mortgage facility, only 35 (9.4%) indicated that they benefited. This means that they accessed other sources. A total of 5.6%, of respondents who did not benefit from a mortgage facility were unaware of such facilities, how to access them or where, and who qualifies, while 11.5% showed no interest in a mortgage facility and 28% believed that it was attached to stringent conditions. High interest rates and the conditions attached discouraged them from applying.

**Table 10.4: Respondents' access to Mortgage Facility**

VARIABLE	STUDY AREA							
	Apapa =114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Access to Mortgage Facility								
Accessed	44	38.6	47	44.8	54	34.8	145	38.8
No Idea	5	4.4	16	15.2	0	0	21	5.6
Not Interested	28	24.6	1	1	14	9.0	43	11.5
Not Needed	-	-	-	-	11	7.0	11	2.9
Demand too High	24	21	35	33.3	46	29.7	105	28
Not Accessible	-	-	6	5.7	18	11.6	24	6.4
Own a House Already	13	11.4	-	-	12	7.7	25	6.7
TOTAL	114	100	105	100	155	100	374	100
Benefits from Mortgage								
Yes, Benefited	21	18.4	3	2.9	11	7.1	35	9.4
No, Did Not Benefit	23	20.2	44	41.9	43	27.7	110	29.4
No Access	70	61.4	58	55.2	101	65.2	229	61.2
TOTAL	114	100	105	100	155	100	374	100

Source: Author, 2018

### 10.2.2 Control Implementation; Awareness, Compliance and Enforcement

The respondents' awareness of the need for a permit prior to development is shown in Table 10.5. A total of 78.9% were aware of development permits and understood the process and the implications of contravention. This confirms that contravention may be condoned by the relevant authorities. Furthermore, the majority of the respondents were aware of the relevant authorities responsible for granting permits and 79.7% understood the procedures involved. The results show a correlation between awareness and the requirements. Seventy-four per cent of the respondents knew how to apply for a permit and the supporting documents required, while 26% did not.

**Table 10.5: Awareness, Compliance and Enforcement**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Awareness of Development Approval								
Aware	72	63.2%	84	80.0	139	89.7	295	78.9
Not aware	42	36.8%	21	20.0	16	10.3	79	21.1
Total	114	100	105	100	155	100	374	100
Application Procedures								
Aware	86	75.4	79	75.2	133	85.8	298	79.7
Not aware	28	24.6	26	24.8	22	14.2	76	20.3
Total	114	100	105	100	155	100	374	100
Requirements								
Know	86	75.4	74	70.5	117	75.5	277	74.1
Do not Know	28	24.6	31	29.5	38	24.5	97	25.9
Total	114	100	105	100	155	100	374	100

**Source:** Author, 2018

Table 10.6 shows that 43.6% of the respondents had received approval for their development while 56.4% had not. This is due to the fact that most of the buildings had one or more structural changes or changes in the approved use, for which separate approval is required.

Of the 163 respondents that had approval for their properties, 44.8% waited for such approval before commencing with development, while 55.2% did not. In the latter case, penalties were paid for contraventions that leave indelible marks on the urban space. The respondents blamed the planning authorities for bureaucracy and unnecessary delays in approval, with

69.3% confirming that this was the case, while 30.7% received their permits in good time. All the respondents that experienced delays in receiving approval waited at least two weeks more than the recommended time, while 50.4% waited more than three months. This is very discouraging for developers and opens up opportunities for contravention and corruption of planning officers.

**Table 10.6: Approval for Development**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Approval of Building for Development								
Approved	44	38.6	22	21.0	97	62.6	163	43.6
Not Approved	70	61.4	83	79.0	58	37.4	211	56.4
Total	114	100	105	100	155	100	374	100
Approval before Development Commenced n = 44,22,97 respectively								
Yes	19	43.2	15	68.2	39	40.2	73	44.8
No	25	56.8	7	31.8	58	59.8	90	55.2
Total	44	100	22	100	97	100	163	100
Approval Given within Stipulated Time n=44,22,97 respectively								
Given on Time	11	25.0	13	59.1	26	26.8	50	30.7
No Delayed	33	75.0	9	40.9	71	73.2	113	69.3
Total	44	100	22	100	97	100	163	100
Development Approval Excess Time n=33,9,71 respectively								
Two Weeks	0	0.0	0	0.0	12	16.9	12	10.6
One Month	5	15.2	1	11.1	13	18.3	19	16.8
Two Months	8	24.2	0	0.0	4	5.6	12	10.6
Three Months	3	9.1	0	0.0	10	14.1	13	11.5
Over Three Months	17	51.5	8	88.8	32	45.1	57	50.4
TOTAL	33	100	9	100	71	100	113	100

Source: Author, 2018

The responses on the costs of permits are summarised in Table 10.7. In all, 45.4% of the respondents that applied for permits believed that the fees were exorbitant and 74.2% confirmed that the fees paid were more than those stated due to hidden charges that were confirmed by 74.3%. This suggests corrupt practices among planning officials and explains why they are not fully enforcing policies when developers deviate from the approved plans. Finally, 67.9% of the respondents claimed that their payments made to the banks were receipted.

**Table 10.7: Development Charges/Fees**

VARIABLE	STUDY AREA							
	Apapa n=44	%	Lagos Island n=22	%	Victoria Island n=97	%	Total n=163	%
Charges								
Appropriate	1	2.3	4	18.2	5	5.2	10	6.1
Moderate	17	38.6	13	59.1	49	50.5	79	48.5
Exorbitant	26	59.1	5	22.7	43	44.3	74	45.4
Total	44	100	22	100	97	100	163	100
Difference between Approved Fees and Payments Made								
Difference	31	70.5	19	86.4	71	73.2	121	74.2
No Difference	13	29.5	3	13.6	26	26.8	42	25.8
Total	44	100	22	100	97	100	163	100
Receipted Payments								
YES	17	14.9	28	26.7	75	48.4	120	32.1
NO	97	85.1	77	73.3	80	51.6	254	67.9
Total	114	100	105	100	155	100	374	100
Hidden Charges								
YES	85	74.6	61	58.1	132	85.2	278	74.3
NO	29	25.4	44	41.9	23	14.8	96	25.7
TOTAL	114	100	105	100	155	100	374	100

**Source:** Author, 2018

Table 10.8 shows that the majority (76%) of the respondents had made one or more changes to their properties than were approved, made up of 79.8%, 67.6% and 80.6 % in Apapa,

Lagos Island and Victoria Island, respectively. Only 23.3% stated that their properties complied with the plan that was approved. This is evident in the increasing number of street shops springing up next to the fences and frontages of residential buildings, and residential buildings being converted to restaurants, offices, pubs and shops in all the case study areas.

Furthermore, 62% of the respondents that had changed the use originally approved or made structural modifications to their properties had not received permission to do so. They thus contravened and deviated from the development plan. While the law provides for a fine in such cases, this is not a sufficient deterrent given the impact of such developments on the urban space.

Finally, 91.2% of the respondents confirmed that the development had been monitored. The fact that, despite this, the regulations were violated in many cases, points to weak mechanisms and suggests that the building control agencies are not able to adequately control development.

**Table 10.8: Approval of Change of Use for Existing Development**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Change of Use								
YES	91	79.8	71	67.6	125	80.6	287	76.7
NO	23	20.2	34	32.4	30	19.4	87	23.3
TOTAL	114	100	105	100	155	100	374	100
Approval for change of use n= 91,71, 125 respectively $\sum n= 287$								
YES	28	30.8	22	31.0	59	47.2	109	38.0
NO	63	69.2	49	69.0	66	52.8	178	62.0
TOTAL	91	100	71	100	125	100	287	100
Penalties and Enforcements n= 63,49,178 Respectively $\sum N=178$								
YES	39	61.9	32	65.3	46	69.7	117	65.7
NO	24	38.1	17	34.7	20	30.3	61	34.3
TOTAL	63	100	49	100	66	100	178	100
Monitoring during Building Process								
YES	113	99.1	92	87.6	136	87.7	341	91.2
NO	1	0.9	13	12.4	19	12.3	33	8.8
TOTAL	114	100	105	100	155	100	374	100

Source: Author, 2018

### 10.2.3 Land utilization and compliance

Table 10.9 shows that, in response to the question on development patterns, 72.7% of the respondents agreed that development patterns in the city are not orderly. They blamed urban planners for the way the city grew and 16.3% called for improved infrastructure in order to improve urban living. Furthermore, while most of the respondents did not understand the details and modalities of land utilization, 71.7% indicated that land is adequately used in the metropolis.

**Table 10.9: Land utilization and compliance**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Development Pattern								
Pattern is Haphazard	52	45.6	80	76.2	140	90.3	272	72.7
Good	21	18.4	5	4.8	0	0.0	26	7.0
Need Facilities	41	36.0	20	19.0	0	0.0	61	16.3
Satisfactory	0	0.0	0	0.0	15	9.7	15	4.0
Total	114	100	105	100	155	100	374	100
Adequacy of Land Utilization								
Adequate	28	24.6	17	16.2	61	39.4	106	28.3
Not adequate	86	75.4	88	83.8	94	60.6	268	71.7
Total	114	100	105	100	155	100	374	100

**Source:** Author, 2018

### 10.2.4 Urban Planning and Policy

The respondents were asked if they felt that the planning agencies were doing enough to achieve sustainable development and asked to give reasons for their answer. They expressed dissatisfaction with the planning agencies at all levels and jurisdictions due to the bureaucratic and delayed procedure for acquiring building approval, with 66.3% believing that the planning agency is ineffective.

Table 10.10 shows that, 263 respondents (70.3%) believed that urban planning regulations were not effective, with 42.2% and 28.1% describing them as not effective and grossly

ineffective, respectively. Only 29.6% of the respondents believed that planning regulations were effective in the administration of physical planning in the metropolis. Most of the respondents from Apapa (84.2%) stated that urban planning had failed in the port city due to the deteriorating environment, on-going failure of infrastructure and daily traffic gridlocks. Lagos Island residents were of the same view, with 74.3% expressing dissatisfaction with urban planning regulations. Eti-Osa respondents were more positive, with 56.8% agreeing that urban planning regulations were effective.

**Table 10.10 Responses on urban planning policy**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Planning Agencies Effective in Sustainable Development								
Effective	19	16.7	43	41.0	64	41.3	126	33.7
Not effective	95	83.3	62	59.0	91	58.7	248	66.3
Total	114	100	105	100	155	100	374	100
Effective Urban Planning Regulations								
Not Effective	96	84.2	23	21.9	39	25.2	158	42.2
Grossly Ineffective	1	0.9	55	52.4	49	31.6	105	28.1
Fairly Effective	17	14.9	24	22.9	59	38.1	100	26.7
Very Effective	0	0.0	3	2.9	8	5.2	11	2.9
Total	114	100	105	100	155	100	374	100

**Source:** Author, 2018

The results in Table 10.11 show that more than 74% of the respondents believed that public participation in urban planning and development is inadequate. They expressed dissatisfaction with the policy approaches to development and infrastructure provision.

It was noted that land owners can partner with investors to introduce mixed-use development. The respondents were hence asked whether they would be willing to partner with other landowners and private developers for mixed-use development and, if not, their reasons.

The majority (a cumulative 79.7%) of the respondents indicated that they would not be willing to partner with other investors, with 88.6%, 66.7% and 81.9% in Apapa, Lagos Island and Victoria Island, respectively. The reasons can be summarized under the headings of trust,



finance, culture and past experiences with government.

**Table 10.11: Reponses on Public Participation in Urban Planning**

VARIABLE	STUDY AREA							
	Apapa n=114	%	Lagos Island n=105	%	Victoria Island n=155	%	Total n=374	%
Reponses on Public Participation								
Adequate	23	20.2	54	51.4	17	11.0	94	25.1
Not adequate	91	79.8	51	48.6	138	89.0	280	74.9
Total	114	100	105	100	155	100	374	100
Willingness to enter partnerships								
Willing	13	11.4	35	33.3	28	18.1	76	20.3
Not willing	101	88.6	70	66.6	127	81.9	298	79.7
Total	114	100	105	100	155	100	374	100

**Source:** Author, 2018

Finally, the respondents were asked to make recommendations for sustainable development in the Lagos metropolis. Table 10.12 shows that 43.6%, 17.6% and 16% (cumulatively 77.2%) called for more effective urban planning and policy implementation; 43.6% recommended the implementation of development plans; and 17.6% effective control of development, while 16% called for the approval process, which is unnecessarily prolonged, to be revisited.

In addition, 5.9%, of respondents recommended that more housing units be built, while 5.6% believed that rural development could reduce urban migration; government should hence also focus also on the city's outskirts. Apapa had the most respondents (52.6%) that recommended a review of the building approval process, while in Victoria Island, which has witnessed the highest level of change of use, most respondents called for proper implementation of plans.

**Table 10.12: Respondents' recommendations**

VARIABLES	STUDY AREAS			TOTAL
	Apapa N=114	Lagos Island N=105	Victoria Island N=155	
Construction of More Housing Units	0 .0%	0 .0%	22 14.2%	22 5.9%
Monitor the activities of Land Owners	17 14.9%	25 23.8%	0 .0%	42 11.2%
Proper Implementation of Various Plans produced in the State	0 .0%	80 76.2%	83 53.5%	163 43.6%
Government should also focus on the City's Outskirts	21 18.4%	0 .0%	0 .0%	21 5.6%
Ensure Effective Development Control	16 14.0%	0 .0%	50 32.3%	66 17.6%
Review of Development/Building Approval Process	60 52.6%	0 .0%	0 .0%	60 16.0%
Total	114 100.0%	105 100.0%	155 100.0%	374 100.0%

Source: Author, 2018

### 10.3 Test of Hypotheses and Inferential deductions

Tables 10.13 - 10.16 show the tests of hypotheses for inferential deductions.

Hypothesis one

**H<sub>0</sub>:** Poor land utilization and uncontrolled urban spatial growth are functions of poor planning and ineffective frameworks in achieving sustainable development.

**H<sub>1</sub>:** Land utilization and control of urban spatial growth are functions of adequate planning and effective frameworks in achieving sustainable development.

**Table 10.13: Statistics for Hypothesis one**

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Adequacy of Land Utilization	374	1.72	.451	.023
Planning Agencies Effective in Sustainable Development	374	1.66	.473	.024
Public Participation Adequate in Urban Planning	374	1.75	.434	.022

Source: Author, 2018

The T-Test statistic is applied to the hypothesis and the decision to be taken depends on the P-values obtained. For the hypothesis, the decision rule is to reject the null hypothesis and accept the alternate hypothesis where the P-value is less than 0.05 or accept the null hypothesis ( $H_0$ ) and reject the alternate hypothesis ( $H_1$ ) where the P-value is greater than 0.05.

**Table 10.14 T-Test Statistics for Hypothesis one**

One-Sample Test						
	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Adequacy of Land Utilization	73.565	373	.000	1.717	1.67	1.76
Planning Agencies Effective in Sustainable Development	67.957	373	.000	1.663	1.61	1.71
Public Participation Adequate in Urban Planning	77.855	373	.000	1.749	1.70	1.79

Source: Author, 2018

For hypothesis one, the significance is 0.000 which is less than 0.05, therefore the null hypothesis ( $H_0$ ) is rejected and the alternate hypothesis ( $H_1$ ) is accepted.

This is because poor land utilization and uncontrolled urban spatial growth are not exclusively a function of poor planning and ineffective frameworks; as noted in chapter four several factors are involved in urban planning and development. However, land utilization and control of urban spatial growth are functions of adequate planning and effective frameworks towards achieving sustainable development.

From the result above the t-test statistic indicates that land utilization by owners of properties and controlled urban spatial growth are functions of adequate planning and effective frameworks in achieving sustainable development. The result is significant at the 5% significance level.

### Hypothesis two

- H<sub>0</sub>:** Changes in city functions and urban growth have brought about changes in land use; therefore, integrated anticipated growth and forward planning will not significantly impact on the urban landscape.
- H<sub>1</sub>:** Changes in city functions and urban growth have brought about changes in land use; therefore, integrated anticipated growth and forward planning will have a significant, positive impact on the urban landscape.

**Table 10.15: One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
Existing Development Changes Occurrence	374	1.23	.423	.022
Respondents' Existing Development Changes Approval	287	1.62	.486	.029
Planning Authority Action for Non-Development Approval	178	1.34	.476	.036

Source: Author, 2018

The T-Test statistic is applied to the hypothesis and the decision to be taken depends on the P-values obtained. For the hypothesis, the decision rule is to reject the null hypothesis and accept the alternate hypothesis where the P-value is less than 0.05 or accept the null hypothesis ( $H_0$ ) and reject the alternate hypothesis ( $H_1$ ) where the P-value is greater than 0.05.

**Table 10.16 : One-Sample Test**

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Existing Development Changes Occurrence	56.345	373	.000	1.233	1.19	1.28
Respondents' Existing Development Changes Approval	56.456	286	.000	1.620	1.56	1.68
Planning Authority Action for Non-Development Approval	37.638	177	.000	1.343	1.27	1.41

Source: Author, 2018

The significance is 0.000 which is less than 0.05, therefore the null hypothesis ( $H_0$ ) is rejected and the alternate hypothesis ( $H_1$ ) is accepted. From the result above the t-test statistic indicates that changes in city functions and urban growth have brought about changes in land use; therefore, integrated anticipated growth and forward planning have a significant and positive impact on the urban landscape. This hypothesis is based on the objectives of urban planning; anticipating urban growth and making allowance for development through projections can help to manage the challenges that come with it. Non-existent or deficient forward planning is the reason why planners and governments of fast developing countries are overwhelmed and lack approaches to combat problems they are ill prepared for.

From the hypotheses tested, it was observed that the outcome of statistical analysis was in line with the observed frequencies based on the respondents' reaction to the distributed questionnaires. The findings and their implications are thus as follows:

- Land utilization and control of urban spatial growth are functions of adequate planning and effective frameworks in achieving sustainable development.
- Changes in city functions and urban growth have brought about changes in land use; therefore, integration of anticipated growth and forward planning have a significant and positive impact on the urban landscape.

#### **10.4 Discussion of Findings**

An increased urban population and associated uncontrolled spatial expansion have meant that Lagos' carrying capacity is failing, giving rise to unliveable environments. Poor planning for housing, infrastructure and services has resulted in inadequate living spaces and urban decay. The response from planners on their functions, jurisdiction and collaborations are based on the 2010 Lagos state urban planning law. Aside from implementing the law and basic development control, the planning agencies have failed to conceptualize a sustainable city; hence, planning approaches are one-dimensional, and implementation thereof is ineffective and non-responsive. There is little or no conscious planning for a sustainable environment as most plans, policies and laws were formulated in reaction to pressing issues and problems rather than based on anticipatory forward planning.

The development plans in Lagos are a form of sectoral development which will be difficult to harness into a whole. Furthermore, they are running behind schedule and failing to fulfil their objectives. The fear is that, like the general master plans, they will not be implemented. The antecedent of poor plans in Nigeria is poor landscapes. The plans are rigid and not malleable to change. The planning and enforcement agencies lack effective mechanisms; hence, the problems of urban plan implementation and control persist. While planning laws and ordinances aim to control and regulate development, ineffective implementation is as bad as having no measures in place.

Observed development patterns; conflicting land uses, and inconsistent physical arrangements and landscapes in the city, indicate high levels of tolerance of change of use, extending buildings beyond setback limits and raising the floors of buildings without adequate plans and permission. This suggests weak control mechanisms and implementation

of planning regulations. The right of land owners to development must be exerted taking into account the development plan (zoning regulations) and consideration of the overall environment. A significant number of developers have contravened different regulations without any obvious consequences. They are fined for contravention without necessarily considering the cost of such contravention for the urban landscape. The option of a fine enables them to deliberately flout development plans and control. This is the reason why developers extend their buildings beyond limits and approved heights, adjust them without approval, and ignore specified plot coverage and building lines, amongst other things.

The mandatory requirements for physical development in the State are violated due to the lengthy approval process which involves obtaining clearance from other government agencies and submission of all relevant documents and plans and takes a maximum of 90 working days for developments up to 6 floors, 180 days for other applications, and a maximum of 60 days for renovation and demolition permits and often longer. Developers are thus reluctant to apply for building permits.

The Renewal Agency is bogged down in high-level bureaucratic procedures and confronts political interference in formulating and developing urban renewal strategies for the State. This undermines the objectives of the program and makes it less effective.

Sustainable urban development largely depends on the administration and coordination of the planning authorities alongside active community participation. Poor control of development in Lagos metropolis is attributable to the poorly spelt out jurisdiction of the various agencies responsible for the built environment. The functions of the different agencies overlap, and local authorities are not given the necessary resources to enforce compliance. The 1992 law provides for urban planning by local authorities. However, the federal government has declined to recognize the existence of 37 LGAs created by the Lagos administration. This arm of the Lagos administration is not adequately resourced to engage in urban planning.

Furthermore, the mega city status of the city is misconstrued, and is often regarded as an accolade rather than a ranking of urban agglomeration based on a very large population which comes with enormous needs and demands that have to be taken into account in development plans. Other problems identified are the top-down approach to urban planning and management and government interference in the planning process. This is in line with Awogbemi (1999) who maintains that government derives revenue from illegal building in



the state and thus ignores enforcement. He sums the situation up as follows: “Nigerian planners propose and the government disposes”.

## CHAPTER ELEVEN

### SYNOPSIS, MODEL DEVELOPMENT AND POLICY RECOMMENDATIONS

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*Sustainable compact development is a requirement for human survival and continuity; it reduces the potency and consequences of sprawl (Zetter and White, 2002).*

#### **11.0 Introduction**

This chapter provides a summary of the research. It evaluates the findings against the study's objectives and discusses how they contribute towards sustainable spatial planning. The chapter concludes by recommending a model aimed at optimal use of land and effective control measures.

#### **11.1 Synopsis of Research by Objectives**

The morphology of cities and places is influenced by various factors, with population growth and urbanization at the top of the list. The demand for space to accommodate growth is patent in the modification of natural landscapes and resources, with ensuing implications. Uncurbed urban growth into rural land harms the natural environment, while inner city decay due to old, non-functional facilities and infrastructure is common in Africa, Nigeria and particularly Lagos city. In the Nigerian context, not much has been done towards achieving sustainable spatial development; from pre-colonial to post-colonial times, there has been no focused policy to achieve sustainable urban land use and development control. Indigenous patterns of development laid the foundation for clustered, poorly spaced development. The colonial administration built fragmented cities while the post-colonial administration lacked good governance, focus and implementation strategies; hence, the status of the metropolitan city as a centre of excellence and trade and as a seaport is not reflected in its spatial forms.

The consequences of unsustainable development call for interventions and approaches to build cities that accommodate their growth. The use of space can be planned to harmonize and accommodate functions without creating conflict and chaos; adequate integration of anticipated growth and forward planning will significantly mitigate the impacts on the urban landscape. Towards meeting this aim, the study set eight objectives, namely, to define the

environment, its components and classes, and identify growth and change factors, as well as planning and development approaches and techniques towards achieving sustainable forms.

The chapter on the methodology adopted outlined aspects, and the scope and approaches of morphological studies. The study adopted Conzenian and Lynchian's approach to morphological studies (See chapter one - background information and approaches of morphological studies). These approaches revolve around forms and arrangements of spatial features and elements and their outcomes. They examine the overall character and physical configuration of city elements using figure ground analysis (including buildings, open spaces, plots, and streets), urban design (order, function and aesthetics) and control of physical development.

Planning future cities requires an understanding of their morphology and the forces of change. The theoretical framework adopted provided the epistemology of the environment. It analysed existing knowledge and concepts and theories towards synthesizing a model for sustainable spatial development. Theories of place, growth, location, function and patterns were reviewed and qualitative and quantitative attributes, internal and external spatial structure determined by size, shape and forms were recognized. Trancik's figure ground theory explains the relationship of spatial elements. It highlights the relevance of urban design and planning in organizing spatial elements in the most harmonious and sustainable manner. The structure of a place is malleable and susceptible to change; hence, forms need to be guided to achieve sustainability. The review argued that places have unique attributes that require tailored plans that address the capacity and patterns of facilities for circulation of people; building types and density, open spaces and general land use planning.

Fixed generalised models cannot adapt to the exclusive attributes and needs of cities. Metropolitan Lagos' unique features include the fact that it is a multi-functional, coastal city with limited land for development due to surrounding water bodies and a heterogeneous population of over 17 million (Lagos State).

The Concentric, Sector and Multiple Nuclei models of urban land use adopted in the industrial cities of America by Burgess (1925), Hoyt (1939) and Harris and Ullman (1945) generalized spatial arrangements and relationships in different urban zones. The concentric model illustrates urban growth as a continuous process of invasion and succession of

concentric zones. It also illustrates social stratification and spatial differentiation. The inner city is occupied by the low-income class with the middle and high-income group who own cars or can afford higher transport costs living further away from the CBD. This model was criticised for predicting a one-way growth pattern, which cannot be generalised to all places. The sector model was also criticised for its focus on residential land use and exclusive dedication of sectors to single uses, which is unrealistic. While the multiple nuclei model is comprehensive and provides for other land uses, it is limited due to the temporal nature and dynamic of land use. The land rent, growth pole and central place theories focus on economic factors to model spatial configuration and location and land uses.

While these models explain urban morphology, they lack completeness and are fast losing relevance in planning contemporary cities due to emerging dynamics of growth and change. Some of the representations are static, poorly representing the temporal aspects of settlements and adopting unrealistic assumptions of topology, transportation costs, market systems, and choice, etc.

The review of urban design and the theory of a good city form highlighted the attributes and principles of sustainable places. These include order, vitality, diversity, access, control, aesthetics, and function, etc. It was argued that achieving sustainable places calls for critical and pragmatic approaches to urban planning.

The antecedents of city planning, and civilization can be studied in phases, spanning prehistoric to modern times, each involving revolutionary innovation and growth (Morris, 1995). The historical review revealed that development changed with functions, culture, worship, governance and administrations. Human settlements developed around the seat of administration, the chief's palace, places of worship or central places of entertainment and business such as the village square and market places. People lived close to their farms and workplaces and conducted their business in close proximity as walking and later animal-driven carts were the primary means of transportation for goods and services. The old cities reveal a natural form of organization; they consisted of mixed-use developments near courtyards, squares, markets, churches, and town halls etc., all which have been lost to modern development (Krier, 1991). Medieval cities had mixed-use development as parts of buildings were designated for commercial uses and business. The discovery of gun powder, and the industrial revolution and growing population alongside urbanization changed these forms (Catanese, 1988).

The spatial implications of rapid urbanization, population growth and spreading cities require frequent upgrade of methods; it was noted that planning approaches are advancing in tandem with the demands of growth and development towards creating liveable cities. This is evident in the changing themes of urban planning such as garden cities, the city beautiful movement, and mixed use, etc. Other innovative and specialized use plans in recent years includes the Aerotropolis by Kasarda and the Techno-polis, etc. all of which are cities of the future. However, there is need for trans-disciplinary approaches and research towards solving problems of incompatibility.

The concept of sustainability is defined as development for today in consideration of the future. It seeks to ensure that present needs are met in such a way that future generations will not be deprived. Sustainable urban forms demand less resources and reduced waste generation. Target-oriented planning policies are called for that adopt a robust and responsive approach and embrace holistic consideration of the environment and the social as well as economic aspects of the city. The New Urbanism movement advocates for compact mixed-use development towards achieving walkable neighbourhoods and different housing types, styles and density. It also advocates for planning for diversity and the heterogeneity of the city.

Urban planning is a tool to implement sustainable objectives through its ability to forecast and predict change and design instruments for guidance and control. These instruments range from development plans, to policies and regulations, which work simultaneously towards achieving a harmonized environment. This age long activity has advanced with change and the demands of growth. It guides development, transportation, land uses, housing development and the general physical environment. Urban planning coordinates the relationship between land uses and ensures compatibility, harmony and proportionate facility allocation as determined by function, size and form. These herculean tasks demand control mechanisms, specialization, competence, funding and policy formulation. While the factors that influence and challenge urban planning and management have been identified, other aspects of planning also need to be effective to achieve its overall goal of building sustainable places. Hence, urban planning needs to be backed by good governance, urban management and policy formulation to ensure effective control.

Cities grew based on regulations and policies informed by different objectives. Urban planning in Africa varied under different administrations. It progressed from communal and customary approaches to colonial/apartheid, military and democratic administrations. Indigenous development was clustered, and growth was contained by green buffers, farms and gardens. Colonization disregarded indigenous models and structure and integrated social stratification into planning. The result was the spatial fragmentation that is evident in the cities of Nigeria, South Africa, Kenya, Zimbabwe and other countries.

Post-colonial leadership in Africa has also failed to plan sustainable cities. This is due to inconsistent laws and policies and forms of governance. Despite rapid population growth and urbanization, urban planning has not received due attention in the form of policy formulation for spatial planning. Inner cities are continuously degenerating, with insufficient infrastructure provision and maintenance, poor utilization of land and sprawling development, to name but a few problems.

Examples of initiatives adopted by African countries to address these issues include the South African government's RDP and IDP that aim to promote urban regeneration. Nigeria's Urban and Regional Planning Law of 1992 empowered states and local government to carry out planning functions. Based on this law the Lagos State government formulated urban planning policies and laws, of which the 2010 planning law, is the most recent. While it provides for policy formulation and urban development, effective implementation and control of development that is provided for in the law has been lacking.

The study showed that the Lagos CBD is characterized by poor environmental attributes and poor land utilization, calling for urban revitalization. Residential land use in Victoria Island has been succeeded by commercial land use. While land is expensive on Victoria Island, development patterns do not correspond to the cost of land.

Contemporary port cities are places of high density with round-the-clock operations and transportation alternatives. They are global political, economic and financial centres that play major roles in transportation and urban development (Huang et al., 2007). These cities have high functional relevance and spheres of influence and are hence major income generating centres and thresholds of economic, industrial and leisure activities. The development of an urban waterfront has a significant impact on the image of a port city. However, such cities are often subject to poor interpretation of land uses, which is evident in Apapa where fierce

competition for land due to its economic advantages has resulted in the encroachment of incompatible uses and consequent disintegration.

A number of countries have recently launched initiatives to address the challenges confronting port cities by embarking on redevelopment that takes advantage of the opportunities that the water front provides for mixed use development.

In line with The Netherlands' compact city objectives, Amsterdam Municipality prepared plans to prevent uncontrolled urban sprawl and encourage the revitalization of the harbour in the city's Eastern Docklands (Hoppenbrouwer and Louw, 2005). It was decided to transform the area into a residential area, and increase housing quality and quantity, and employment by intensifying the use of land and concentrating Greenfield developments within existing built-up areas. Coincidentally, it has the same attributes as the Lagos metropolis as it was traditionally a prosperous harbour for trans-shipment of general cargo and bulk goods. The scheme included approximately 8,500 dwellings, around 100,000 square meters of commercial space and approximately 20,000 square meters of educational and service facilities with an urban character, with high building densities of 100 dwellings per hectare of land.

Successful achievement of this initiative requires strategic urban planning and intensive financing with private sector collaboration. The port city requires multi-modal transport systems, to promote easy haulage of good and services, and solve traffic gridlocks.

Other case studies include Hong Kong and New York. These places also have similar attributes to the Lagos metropolis. Both are affluent port cities and centres of international trade and commerce with limited and constrained land surrounded by water and high population densities. These factors informed the vertical development strategy which provides more dwelling units per hectare. Today, both cities are identified by the footprints of their skyline and are described as "international skyscraper metropolises". Hong Kong has advanced in most areas of urbanism and transportation and New York has grown to be amongst the most energy efficient and least automobile-dependent cities in the United States.

## **11.2 Conclusion and Recommendations**

This study assessed the morphology of Lagos mega city and the impacts on the use of land towards sustainable development with effective control mechanisms. It examined the dynamics of land use, factors that influence spatial forms, planning regulations and



implementation procedures for development approval, control and enforcement. Functions' impacts on growth, forms and patterns of development; the growing population and the lack of adequate plans and provision for increased demand have resulted in congestion and haphazard development. Inadequate development policies and laws to guide urban development amidst poor urban planning, and a lack of proper implementation and effective control mechanisms are the major reasons for poor spatial forms.

The findings support the hypothesis that unsustainable growth patterns impact on spatial extent and general wellbeing. In line with the good cities theory, it was argued that the adoption of sound planning, and control mechanisms could result in revitalization of the urban environment. Cities are investment centres that are expected to deliver profitable outcomes; a poorly planned city with poor outcomes is an investment in losses (Cities-Alliance, 2007).

The study therefore concluded that planning for maximum land utilization can curb urban sprawl if effective frameworks are put in place to control development. This can be achieved by mixed-use development, consideration of carrying capacity and effective control mechanisms.

Having identified the factors that influence the use of land and established that there is increased demand for inelastic land, the study recommends a Land Use Optimization and Effective Control-Mechanisms Model (LUOEC Model) towards achieving sustainable development.

The model clearly outlines the objectives, stages, approaches and policy strategies towards sustainable spatial development with consideration for the spatial and non-spatial attributes of size, functions and form.

### **11.3 Land Use Optimization & Effective Control Model - Objectives and Mechanisms**

The rapidly urbanizing nature of today's world calls for new ways of building cities. The availability of land for residential development is not on par with the growing population and the demand for housing; hence, the need to plan to accommodate growth. This will require critical approaches. Planning should therefore plan for the reality on the ground rather than resorting to hypothetical models and spatial representations. Hence, the model aims to

achieve balanced use of land and services within the capacity of the city to achieve and maintain a sustainable environment.

Achieving sustainable cities requires deliberate planning for future growth and efforts to overcome the complexities in the development process. Sustainable places are those where all development is positively channelled towards achieving a better-quality environment.

The sustainability of the environment hinges on optimal use of land (densification) with adequate carrying capacity and effective control mechanisms. Density enables efficient use of land; reduced travelling distances to work and improved public transport as well as encouraging walking and cycling. This can be achieved through strategic management and effective implementation of planning laws, policies and plans.

As implied by its name, optimal land utilization is an approach to new urbanism towards building sustainable cities and preserving natural resources. Several approaches and methods have been proposed to build cities that are not only organized, beautiful and functional, but competitive and liveable. Optimal land utilization rests on densification; it aims to plan urban areas in such a way that they accommodate high population densities without the chaos of congestion. It seeks to accommodate high population levels in organized settings with planned carrying capacity, mixed uses and a variety of housing using the principles of design, order, symmetry, and proportionality, etc.

Arguments have been made for and against compact, high-density development. There has also been debate on appropriate scales and levels of settlement for compact development, while some scholars have raised concerns relating to social components, security and carrying capacity. However, the compact city approach is not rigid and does not have a predetermined scale: it can be applied at any scale (building, neighbourhood, town, or city) and function. A template for mixed uses can be generated for a town, city, metropolis, or even a neighbourhood in proportion with the predominant land use and function through trans-disciplinary methodologies and soft zoning to avoid conflict of activities or failing infrastructure and carrying capacity.

The model provides for optimal land utilization and effective development control. It promotes reduced use of land resources while development control is the policy aspect of the model that ensures implementation and compliance with plans. The model (Fig. 11.1) is a working tool for planners and policy makers. It assists in drafting plans that are achievable and tailored to needs and ensures that cities conserve both the natural and built environments,

and are attractive, efficient places in which to work and live. The model thus takes into account the attributes of settlements and the factors of growth and change.

Infrastructure such as housing, roads and drainage determines functionality, convenience and movement. These facilities directly support urban development and harmonize and enhance the built environment for effective functionality and general liveability. An urban environment cannot function optimally without adequate facility planning and development. This triggers the urban form as people converge or cluster around places with functional infrastructure. Consideration of infrastructure capacity in relation to the size, function and form of settlements ensures effective functioning of cities and convenience for inhabitants in a sustainable manner with minimum impact on the environment.

Other criteria to be considered are:

- Growth poles and/or central places.
- Population - projected population for a planned period (20 years)
- Average household size determined by the census
- Total land area and land use classification aggregate %
- Socio-economic/housing classification
- Acceptable densities, FAR information, and floors and dwellings per plot

Successful adoption and implementation of this model requires an enabling environment, urban management policies, laws and regulations and good governance. This is because urban planning and development is only effective when backed by policy, laws and effective public participation. The government should enact growth management policies to ensure that plans are implemented to meet the needs of the population for whom they were designed. Specific laws should be adopted to preserve peripheral lands, conserve agricultural lands, provide for open space and improve housing supply and delivery.

Densities should be effectively planned and zoned accordingly; stipulating places of high and low density along with specific criteria. This will make it clear where and what a land owner can develop. Ownership of land does not necessarily mean the owner can develop it with no regard for the standard or density specified; this would render it impossible to meet the objectives of the development plan and ensure a harmonised and sustainable urban form.

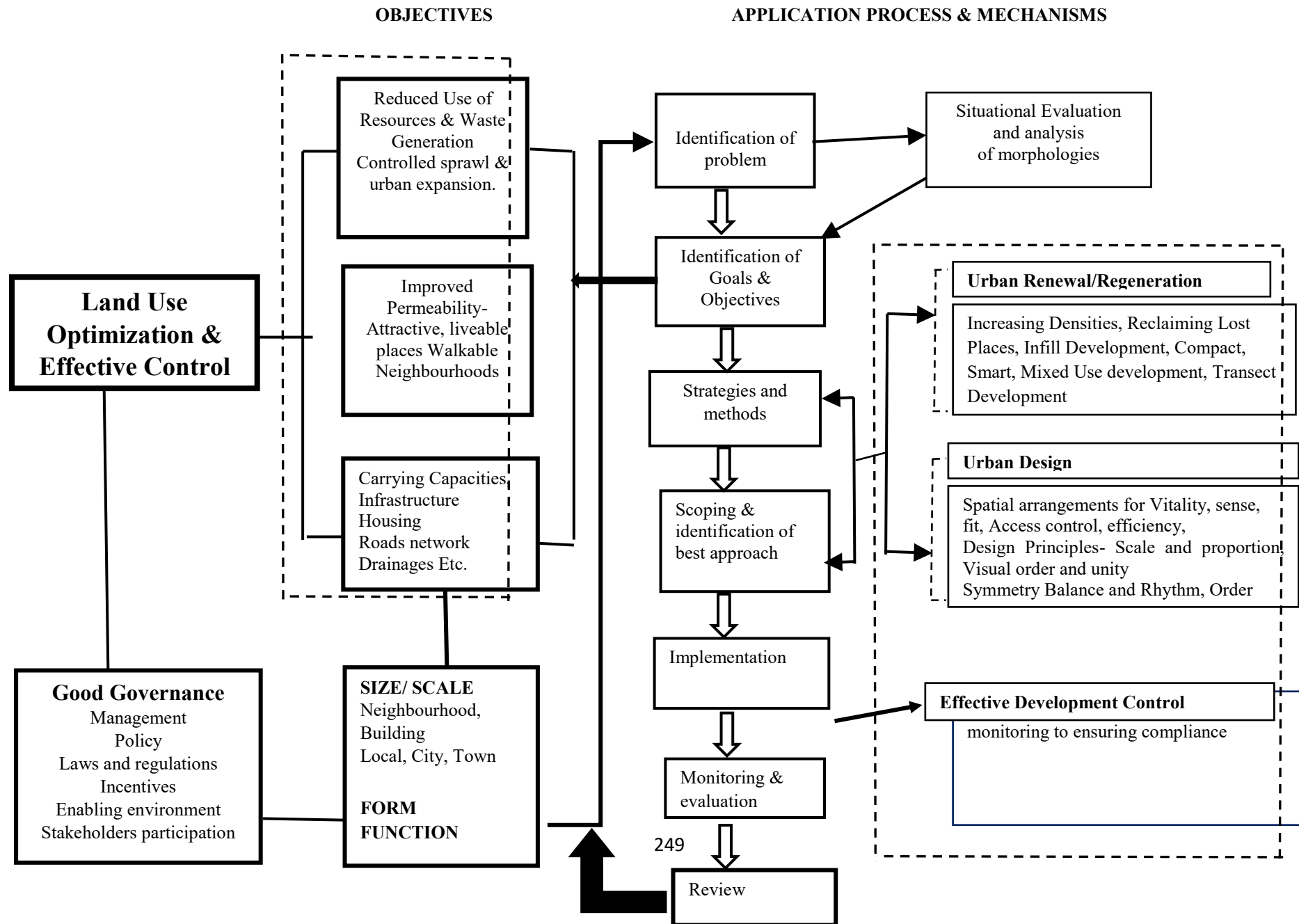


Fig. 11.1: The Land Use Optimization & Effective Control Model (LUOEC Model)

### **11.3.1 Implementation of the model**

This includes the steps to implement the model.

#### **Identification of problem**

##### **Situational analysis - morphological and Environmental Assessment**

Understanding the attributes and conditions of the environment is essential in building sustainable cities. Hence the model recommends a situational analysis; an in-depth study of spatial forms and the structure of the city in its existing state either as a new development or already built up. A fundamental aspect of urban development is the link between space, size and function. This helps to adequately plan for the population and the required carrying capacity while ensuring effective control mechanisms to guide urban development. Firstly, morphological analysis is concerned with conducting studies on the urban population, growth rates, and dimensions and patterns for projection. This enables the state of the environment to be determined as well as the carrying capacity of infrastructure and the problems. Identification of the problems assists with goal identification, strategic planning and choice of approach. Environmental attributes can be assessed using a land use matrix or inventory table and scoring systems. The matrix is used to evaluate the quality of urban elements, floor area, land use classification, type of building, etc. This helps to identify the specific problems for tailored solutions and recommendations. The factors that influence development can be checked through urban governance and policy.

#### **Definition of Goals and Objectives**

Based on the morphological study and findings there is a need to define the goals and objectives to achieve the overall aim of sustainable development. Objectives are set ensure effective use of land, development control and the infrastructure required for convenience and functionality. Various approaches can help to achieve these goals; best fit and suitable methods should be used to provide long-lasting solutions.

Lagos city has restricted land and high population and growth rates which must be adequately planned for. This can be achieved by planning for compact high-density housing and formulation

of policies to enable these developments. The metropolis is totally built up and different approaches to reclaim the city will thus be required. The concepts of reduce, reuse and recycle can be used to promote sustainable physical development by ensuring that less land is used by means of effective land utilization and densification. Reuse is promoted by the mixed use concept where a property is used for more than one use and recycling is represented by urban renewal. Rehabilitation and urban revitalization create opportunities for mixed-use development. This can be achieved by encouraging private sector investors to collaborate with landowners and the government to upgrade failing infrastructure and promote sustainable development.

### **Strategies and methods**

Strategies work in tandem with the objectives of the model. These are subject to review in response to emerging problems and dynamic trigger factors. All approaches to development should be considered in order to identify which options and alternatives are best fit to achieve the desired goal. This will require inter-intra-disciplinary collaboration and inputs from the disciplines of engineering, economics, architecture, and urban design, etc.

The functional attributes of cities require specific patterns and infrastructure to function well. Commercial centres are places of high traffic. Port cities require heavy haulage as well as the tourism opportunities the water front offers. Central business districts are as much public places as they are centres of commerce. These land uses or city functions all require different resources, infrastructure and approaches to urban planning. Such variables should thus be built into development plans for sustainable development.

The city should develop with a planned schedule for services upgrade and consideration of limitations as it cannot host everybody sustainably. Facilities begin to fail when the population for which they are planned and provided is exceeded without control. Hence, there is a need for growth management techniques and policies. Zoning should provide for the pattern and proportion of development, the carrying capacity of infrastructure and effective services provision towards achieving a balanced environment for optimal functionality.

## **Population Projection**

Population is the bedrock of urban growth and spatial development and should thus be a major consideration in urban planning. Planners need to know how many people the plan is designed for and growth prospects which helps to project for the future. Inaccurate information leads to deficiencies in planning for infrastructure and carrying capacity. Population growth calls for effective and optimal land utilization with mixed-use development that can accommodate both residential use and other activities that make the city liveable and vibrant. This includes planning for organised increased development rather than allowing sprawl to unsustainably deplete rural land.

**Mixed-use development** aims to ensure vibrant, attractive and safe places in which to live and work. Rather than representing a combination of uses, it is a blend of such that is physically and functionally integrated by well-connected pedestrian networks for easy accessibility and mobility. Attention must be given to phasing in mixed-use projects for effective implementation and adequate use of available funds. Each stage of the project should be able to stand on its own as a physical entity and self-supporting profit centre.

Mixed use should be developed in conformance with a development plan; these plans set out the minimum types and scales of land uses, types of buildings, densities and a general outline of the area for development. This prevents the haphazard mix of uses that often results from developers' separate, isolated actions. Mixed use needs to be incorporated into the planning strategy and design to ensure the development of a sustainable urban form in Lagos and other cities.

Mixed-use development achieves liveable places through development that blends land uses where appropriate, allowing for greater housing variety and density. It reduces car travel by enhancing proximity to secondary uses that strengthen the neighbourhood character. This is referred to as smart growth or optimal utilization development. As the name implies, such development is comprehensive and offers a total package of city living for every neighbourhood, especially at the city core by locating land uses near one another. It provides a more diverse, mixed class population and a commercial base, supporting viable public transport. It enhances

the vitality and perceived security of an area by increasing the number of activities, hence offering the advantage of economies of scale as illustrated in Fig.11.2.

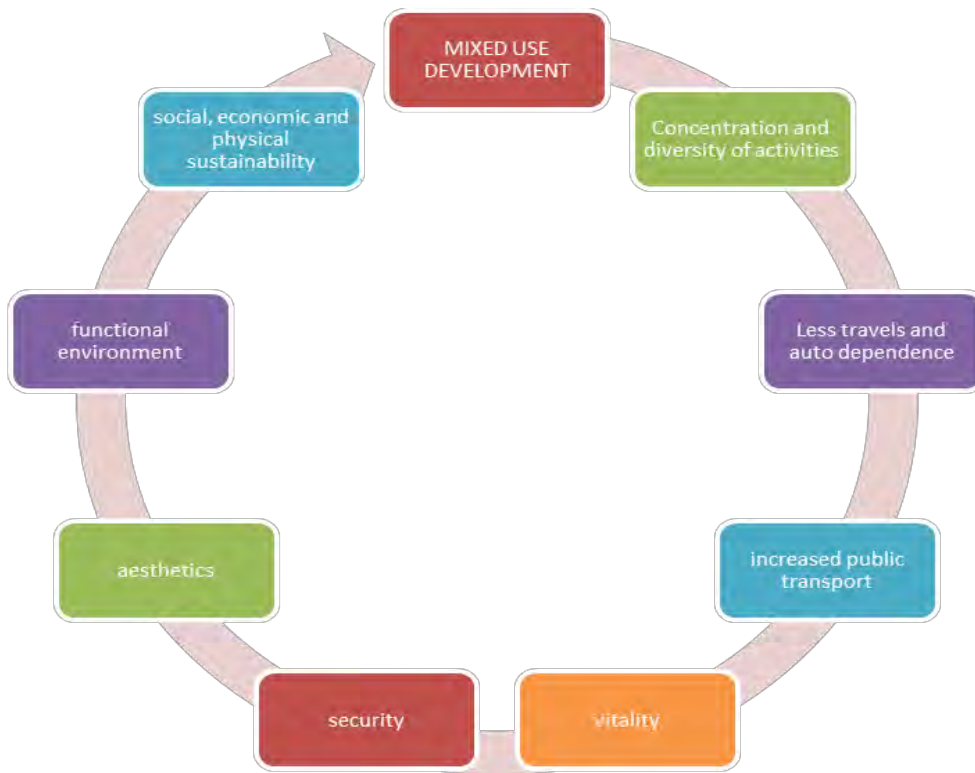


Fig. 11.2: Components of Mixed-use development  
Source: Author's creation, 2018

### Plot Ratio Relationship and Densification

The availability of land for residential development in Lagos is not on par with the growing population and demand for housing; hence the need to plan to accommodate such growth since land is inelastic. On the other hand, incremental and dispersed development has negative implications and increases the cost of providing services and infrastructure. This calls for critical approaches to manage urban growth and development.

Optimal land utilization is an approach to new urbanism that aims to build sustainable cities and preserve natural resources. Several approaches and methods have been proposed to build cities that are not only organized beautiful and functional, but competitive and liveable. Optimal land



utilization involves densification; planning urban areas in such a way that they accommodate high population densities without the chaos of congestion. It helps to provide for a large population in organized settings with planned carrying capacity and mixed uses and housing varieties using the principles of design, order, symmetry, and proportionality, etc. If carefully planned, inner-city land can house an increased population, reduce sprawl and improve living standards and lifestyles.

Density can be measured using different variables ranging from the number of people, dwellings, or rooms or floor space per hectare. It can be calculated either as net or gross, considering only residential development or all other land uses. Net residential densities are expressed as the ratio of the number of people per unit of space, (km<sup>2</sup>, acre or hectare) or in terms of the accommodation they occupy.

The relationship of plot ratio to densification is directly proportional; this implies that the higher the ratio, the more densification is achieved. Land utilization can be calculated using Floor Area Ratio (FAR) and plot coverage (PC). FAR, which is the ratio of total built-up floor area to the plot area simulates the number of floors (i.e., vertical expansion) that can be built. On the other hand, PC is the total building area to the plot area expressed as a percentage; this determines horizontal expansion. Used in different combinations, these two indices offer opportunities to achieve high densities, interesting architectural forms, a dynamic urban environment and sound infrastructural utilization (Laban and Washington, 2001).

Housing units are determined by the type and size of housing. The number of persons housed is determined by the average household size and number of dwelling units.

Strict zoning and residential classification, lead to some places being better built and servicing more people than others. Poor subdivision and land use allocation results in poor representation of some land uses; hence, the need for a workable approach to planning. Flexibility in spatial arrangements integrates land uses with varied types and density of housing (low rise-high rise) within the overall texture of the physical form of the city, hence achieving a balanced range of dwellings, facilities and provisions. Various housing types are required to meet the needs of different families, taking into consideration their status, size etc. In built up cities, housing plans

and policies can be reviewed through urban rehabilitation or outright redevelopment. This enables reclassification of densities; land uses and zoning.

### **Scoping and identification of the best approach**

The dynamics of land use vary between places and cities and approaches thus cannot be fixed. It is important to identify the areas for intervention and what form of intervention is most appropriate towards achieving sustainable spatial forms and development. For sustainable urban planning and urban development, consideration should be given to place uniqueness in both spatial and non-spatial terms. Rigid and incompatible plans lead to further spatial problems; hence, the need for scoping and identification of the best methods to address the problems.

### **Implementation - Policy and Strategies**

Conceptualization of sustainability without adequate efforts or machinery to implement it is futile. These recommendations will only be achievable if they are properly backed by effective implementation, enforcement and control. The LUOEC model thus recommends the application of policy, regulations and implementation strategies.

Implementation of plans and development should be done in phases and scheduled within a time scale and financial plan. A time scale should also be set for review of the development. Effective control mechanisms should be put in place to monitor compliance with the objectives.

The government should formulate plans and strategies to involve community members and other stakeholders in the planning and development process. Stakeholders' participation and partnerships facilitate the planning process. Community participation occurs at different levels from decision making to implementation. This includes disseminating information about proposed projects; expected changes, and resultant benefits and consequences. Implementation is the final stage and any form of community participation that does not reach this stage would have little or no impact on the development process as people would want to know the details of the project, its benefits and challenges and their role in successful implementation.

Planners should be prepared to work in partnership with all stakeholders, developers and the local community. There should be built-in mechanisms for transparency, effective

communication and education for the public and developers on sensitive issues regarding the environment. This equips planners and prepares the minds of the public for projects or approaches. It eases urban planning and promotes acceptance of new laws and projects. There is a need for on-going awareness programmes like workshops and seminars on sustainable urban planning.

Planning should be tailored to meet the needs of the target population, socio-economic activities and, in some places, geographical uniqueness. The fact that the urban space and development is influenced by socio-economic and cultural dynamics amidst natural factors means that plans should be tailored to fit the peculiarities and uniqueness of places, as no two places have the exact same dynamics.

Policy formulation should avoid generalization of land uses; there is a need to classify the uses towards achieving maximum compatibility while ensuring that the objectives of the design are met. Land use plans, zoning codes and policies should be flexible to allow for mixed-use development where appropriate with consideration for maximum land utilization, functionality and aesthetics. This implies that some uses will be more dominant than others; some should be permitted, conditional, or limited and in some cases not permitted.

Comprehensive plans are long range general plans that cover a wide variety of subjects. They often fail because they are ambiguous. There is need to break them down into strategic plans or action plans with specified objectives to be achieved within stipulated time frames, resources; finance and personnel. Development should be phased in for effective implementation. Strategies for implementation of the land use plan should be built into the formulation of the plan.

Capacity development and training is essential to address the complex dynamics of urbanization, population growth, and socio-economic systems that translate into spatial forms. It is recommended that professionals be trained and retrained using best practice procedures and methods capable of solving urban problems. The need for proficiency in the use of contemporary methods such as GIS, remote sensing and other forms of spatial modelling cannot be overemphasised.

The capacity of any single agency is limited; hence, the need for intensive collaboration towards developing capacity. The institutions responsible for transport, housing and urban development

must collaborate. For example, federal agencies should collaborate with state agencies to take decisions on development.

Sustainable development requires team work and transdisciplinary approaches to urban planning. Contributions should be sought from experts in the fields of architecture, landscaping, urban design, housing, economics, and environmental sciences.

The need for research to keep pace with changing dynamics cannot be overemphasized. It is therefore recommended that basic and applied research be conducted on all aspects of the environment and that a data base be maintained to serve as baseline data for forecasting change and needs towards plan implementation.

It is also recommended that specified urban planning services be privatised. This would significantly improve the quality of urban planning and reduce the bureaucracy that is typical of the public sector. Private companies can be appointed to work with the planning agencies under the supervision of the ministry. This would promote competitive service delivery and best practice towards achieving targets. It would also ensure professional data collection and assessment of overall environmental conditions.

Investors should be incorporated into infrastructure development and financing to improve the functionality and liveability of the city. Government and private investors should be encouraged to invest and reinvest in the revitalization and upgrade of the declining inner-city neighbourhood using partnership initiatives. This would enable the housing bulk and density to be re-evaluated for optimal density and mixed-use development.

Government should adopt policy frameworks to guide development actors, including landowners, developers and investors. It should offer incentives to developers for infill and redevelopment such as waivers of approval fees for development in designated areas that meet specified mixed-use and design criteria. The tedious procedure of obtaining approval for building and layout schemes should also be relaxed to encourage compliance.

Policies should be put in place to restrict unsustainable approaches to development and guide the choice of dwelling types on certain land and locations. Owners of land do not necessarily have to develop such if they cannot meet the specified development requirements.

The government should provide more infrastructure and facilities especially well-connected streets and pedestrian networks towards achieving maximum access and the full benefits of mixed development. Housing plays a significant role in urban development and if adequate housing is provided, sprawling developments will be controlled. The government should thus formulate policies for urban infrastructure investment and financing to address future demand.

Finally, government policy should clearly delineate the jurisdiction of the agencies involved in development permits, control, enforcement and compliance.

**Monitoring and evaluation** are essential to ensure compliance with the approved plan and set objectives of the policy. The LUOEC model provides for effective monitoring during and after implementation in order to identify potential problems before they manifest on a large scale. Frequent monitoring also provides information to measure performance and review aspects of the plan.

On-going assessment of development and control mechanisms is central in achieving sustainable development; hence, the model provides for periodic review. This helps to plan for ever-changing land use and urban development dynamics. The urban environment is not fixed, but responds to triggers, change and growth and hence cannot be effectively managed by a model that is incapable of adapting to such changes.

The LUOEC model provides for review to incorporate these dynamics taking into consideration the population growth rate, trends and responses to new policies. It measures and carries out situational analysis in comparison with the objectives of the model for further review.

## **Conclusion**

The research provided recommendations based on the finding that Metropolitan Lagos has high population growth rates and demand for land although it is spatially restrained by surrounding water bodies. The city also plays a prominent functional role as an administrative port city, commercial nerve and destination hub for migrants.

The study's aim was achieved by the development of the Land Use Optimization and Effective Control Model towards achieving sustainable spatial forms and development. The model is not place specific but is a framework that enables knowledge of the environment to be gathered in order to assess planning opportunities and challenges at the present time and in the future. Urban planning must make provision for sustainability and the specific attributes of size, function and form. The model will enable planning policy and institutions to plan and revitalize Lagos and other African cities of similar situation through maximum use of land and effective development control for sustainable city forms.

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## APPENDIX

### Appendix 1: Population projections of Local Government Areas and their respective Population Density: 2007–2009

Local Government Area	Landmass (km <sup>2</sup> )	2006 Population	2006 Population Density	2007 Projected Population	2007 Projected Population Density	2008 Projected Population	2008 Projected Population Density	2009 Projected Population	2009 Projected Population Density
AGEGE	17.00	1,033,064	60,768	1,066,122	62,713	1,100,238	64,720	1,135,446	66,791
AJEROMI/IFELODUN	13.90	1,435,295	103,259	1,481,224	106,563	1,528,624	109,973	1,577,540	113,492
ALIMOSHO	137.80	2,047,026	14,855	2,112,531	15,330	2,180,132	15,821	2,249,896	16,327
AMUWO/ODOFIN	179.10	524,971	2,931	541,770	3,025	559,107	3,122	576,998	3,222
APAPA	38.50	522,384	13,568	539,100	14,003	556,351	14,451	574,155	14,913
BADAGRY	443.00	380,420	859	392,593	886	405,156	915	418,121	944
EPE	965.00	323,634	335	333,990	346	344,678	357	355,708	369
ETI-OSA	299.10	983,515	3,288	1,014,987	3,393	1,047,467	3,502	1,080,986	3,614
IBEJU-LEKKI	653.00	99,540	152	102,725	157	106,012	162	109,405	168
IFAKO/IJAIYE	43.00	744,323	17,310	768,141	17,864	792,722	18,435	818,089	19,025
IKEJA	49.92	648,720	12,995	669,479	13,411	690,902	13,840	713,011	14,283
IKORODU	345.00	689,045	1,997	711,094	2,061	733,849	2,127	757,333	2,195
KOSOFE	84.40	934,614	11,074	964,522	11,428	995,386	11,794	1,027,239	12,171
LAGOS/ISLAND	9.26	859,849	92,856	887,364	95,828	915,760	98,894	945,064	102,059
LAGOS/MAINLAND	19.62	629,469	32,083	649,612	33,110	670,400	34,169	691,852	35,263
MUSHIN	14.05	1,321,517	94,058	1,363,806	97,068	1,407,447	100,174	1,452,486	103,380
OJO	182.00	941,523	5,173	971,652	5,339	1,002,745	5,510	1,034,832	5,686
OSHODI/SOLO	41.98	1,134,548	27,026	1,170,854	27,891	1,208,321	28,783	1,246,987	29,704
SHOMOLU	14.60	1,025,123	70,214	1,057,927	72,461	1,091,781	74,779	1,126,718	77,172
SURULERE	27.05	1,274,362	47,111	1,315,142	48,619	1,357,226	50,175	1,400,657	51,780
<b>TOTAL</b>	<b>3,577.28</b>	<b>17,552,942</b>	<b>4,907</b>	<b>18,114,636</b>	<b>5,064</b>	<b>18,694,305</b>	<b>651,703</b>	<b>19,292,522</b>	<b>672,558</b>

Projected 2007-2009 Lagos State Government 2006 Population Census Using Annual Growth Rate Of 3.2%

Source: Lagos Bureau of Statistics 2012

### Population Projections of Local Government Areas and their respective population Density: 2010-2012

Local Government Area	Land Mass (km <sup>2</sup> )	2010 Projected Population	2010 Projected Population Density	2011 Projected Population	2011 Projected Population Density	2012 Projected Population	2012 Projected Population Density
AGEGE	17.00	1,171,780	68,928	1,209,277	71,134	1,247,974	73,410
AJEROMI/IFELODUN	3.90	1,628,021	117,124	1,680,118	120,872	1,733,881	124,740
ALIMOSHO	137.80	2,321,893	16,850	2,396,193	17,389	2,472,871	17,945
AMUWO/ODOFIN	179.10	595,462	3,325	614,517	3,431	634,181	3,541
APAPA	38.50	592,528	15,390	611,489	15,883	631,056	16,391
BADAGRY	443.00	431,501	974	445,309	1,005	459,559	1,037
EPE	965.00	367,090	380	378,837	393	390,960	405
ETI-OSA	299.10	1,115,578	3,730	1,151,276	3,849	1,188,117	3,972
IBEJU-LEKKI	653.00	112,906	173	116,519	178	120,247	184
IFAKO/IJAIYE	43.00	844,268	19,634	871,284	20,262	899,165	20,911
IKEJA	49.92	735,828	14,740	759,374	15,212	783,674	15,699
IKORODU	345.00	781,567	2,265	806,577	2,338	832,388	2,413
KOSOFE	84.40	1,060,110	12,561	1,094,034	12,962	1,129,043	13,377
LAGOS/ISLAND	9.26	975,306	105,325	1,006,516	108,695	1,038,724	112,173
LAGOS/MAINLAND	19.62	713,992	36,391	736,839	37,556	760,418	38,757
MUSHIN	14.05	1,498,965	106,688	1,546,932	110,102	1,596,434	113,625
OJO	182.00	1,067,947	5,868	1,102,121	6,056	1,137,389	6,249
OSHODI/ISOLO	41.98	1,286,891	30,655	1,328,071	31,636	1,370,569	32,648
SHOMOLU	14.60	1,162,773	79,642	1,199,981	82,190	1,238,381	84,821
SURULERE	27.05	1,445,478	53,437	1,491,734	55,147	1,539,469	56,912
<b>TOTAL</b>	<b>3,577.28</b>	<b>19,909,883</b>	<b>694,080</b>	<b>20,546,999</b>	<b>716,290</b>	<b>21,204,503</b>	<b>739,212</b>

Projected 2010-2012 Lagos State Government 2006 Population Census Using Annual Growth Rate Of 3.2%

Source: Lagos Bureau of Statistics 2012

### Population Projections of the Local Government Area and their respective population Density: 2013–2015

Local Government Area	Land Mass (km <sup>2</sup> )	2013 Projected Population	2013 Projected Population Density	2014 Projected Population	2014 Projected Population Density	2015 Projected Population	2015 Projected Population Density
AGEGE	17.00	1,287,909	75,759	1,329,122	78,184	1,371,654	80,686
AJEROMI/IFELODUN	13.90	1,789,365	128,731	1,846,625	132,851	1,905,717	137,102
ALIMOSHO	137.80	2,552,003	18,520	2,633,667	19,112	2,717,945	19,724
AMUWO/ODOFIN	179.10	654,475	3,654	675,418	3,771	697,032	3,892
APAPA	38.50	651,250	16,916	672,090	17,457	693,597	18,016
BADAGRY	443.00	474,265	1,071	489,442	1,105	505,104	1,140
EPE	965.00	403,471	418	416,382	431	429,706	445
ETI-OSA	299.10	1,226,137	4,099	1,265,373	4,231	1,305,865	4,366
IBEJU-LEKKI	653.00	124,095	190	128,066	196	132,165	202
IFAKO/IJAIYE	43.00	927,939	21,580	957,633	22,271	988,277	22,983
IKEJA	49.92	808,752	16,201	834,632	16,719	861,340	17,254
IKORODU	345.00	859,024	2,490	886,513	2,570	914,882	2,652
KOSOFE	84.40	1,165,172	13,805	1,202,458	14,247	1,240,936	14,703
LAGOS/ISLAND	9.26	1,071,964	115,763	1,106,267	119,467	1,141,667	123,290
LAGOS/MAINLAND	19.62	784,752	39,998	809,864	41,277	835,779	42,598
MUSHIN	14.05	1,647,520	117,261	1,700,240	121,014	1,754,648	124,886
OJO	182.00	1,173,786	6,449	1,211,347	6,656	1,250,110	6,869
OSHODI/ISOLO	41.98	1,414,428	33,693	1,459,689	34,771	1,506,399	35,884
SHOMOLU	14.60	1,278,009	87,535	1,318,905	90,336	1,361,110	93,227
SURULERE	27.05	1,588,732	58,733	1,639,572	60,613	1,692,038	62,552
<b>TOTAL</b>	<b>3,577.28</b>	<b>21,883,047</b>	<b>762,866</b>	<b>22,583,305</b>	<b>787,278</b>	<b>23,305,971</b>	<b>812,471</b>

Projected 2013-2015 Lagos State Government 2006 Population Census Using Annual Growth Rate Of 3.2%

Source: Lagos Bureau of Statistics 2012



## Appendix 2: Independent Observation Results of Survey

### OBSERVATION 1 FOR LAGOS ISLAND

City Elements	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	MEAN	Σ
Housing Variety	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Building conditions	2	3	3	1	1	1	1	1	1	1	2	1	1	1.46	19
Order, harmony	1	2	2	1	1	1	1	1	1	1	1	1	1	1.15	15
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Sanitation	1	2	2	1	1	1	1	1	1	1	1	2	1	1.23	16
Condition of drainages	1	3	3	2	1	2	1	1	1	2	1	1	1	1.54	20
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Condition of Road network	2	3	3	2	2	2	2	2	2	2	2	2	2	2.15	28
Traffic Flow	1	2	2	1	1	1	1	1	1	2	1	2	1	1.31	17
Parking Structure	1	2	1	1	2	1	1	1	1	2	1	1	1	1.23	16
Total	13	21	20	13	13	13	12	12	12	15	13	14	12	14.08	183

### OBSERVATION 2 FOR LAGOS ISLAND

City Elements	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	MEAN	Σ
Housing Variety	1	1	1	1	1	1	1	1	1	1	2	1	1	1.08	14
Building conditions	1	3	3	2	2	1	1	1	1	1	2	1	2	1.62	21
Order, harmony	1	3	3	1	1	1	1	1	1	1	1	1	1	1.31	17
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Sanitation	1	2	2	1	1	1	1	1	1	2	1	1	1	1.23	16
Condition of drainages	1	3	3	1	1	1	1	1	1	1	1	1	1	1.31	17
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Condition of Road network	2	3	2	2	2	2	2	2	2	2	2	2	2	2.08	27
Traffic Flow	1	2	3	1	1	1	1	1	1	2	1	1	1	1.31	17
Parking Structure	2	2	1	1	2	1	1	1	1	1	1	1	2	1.31	17
Total	13	22	21	13	14	12	12	12	12	14	14	12	14	14.23	185

### OBSERVATION 3 FOR LAGOS ISLAND

City Elements	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	MEAN	Σ
Housing Variety	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Building conditions	2	3	2	1	1	1	1	1	1	1	2	1	2	1.46	19
Order, harmony	1	2	2	1	1	1	1	1	1	1	1	1	1	1.15	15
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Sanitation	1	2	2	1	1	1	1	1	1	1	1	2	1	1.23	16
Condition of drainages	1	3	3	1	1	1	1	1	1	1	1	1	1	1.31	17
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	13
Condition of Road network	2	3	2	2	2	1	1	1	1	1	2	2	2	1.69	22
Traffic Flow	1	3	2	1	1	1	1	1	1	2	1	2	1	1.38	18
Parking Structure	1	2	2	1	1	1	1	1	1	2	1	1	2	1.31	17
Total	13	22	19	12	12	11	11	11	11	13	13	14	14	13.54	176

## OBSERVATION 1 FOR APAPA

City Elements	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	MEAN	SUM
Housing Variety	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2.06	33
Building conditions	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3.00	48
Order, harmony	3	1	2	2	2	2	2	2	1	1	2	2	2	1	1	2	1.75	28
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Trees, Parks & Gardens	3	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1.19	19
Sanitation	3	1	1	2	2	2	2	1	1	1	2	1	1	1	1	2	1.50	24
Condition of drainages	3	1	1	3	1	2	2	1	1	1	2	1	1	1	1	2	1.50	24
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Condition of Road network	3	2	1	3	2	2	2	2	2	2	2	1	2	2	2	2	2.00	32
Traffic Flow	3	1	1	2	1	1	2	2	1	2	1	1	2	1	2	1	1.50	24
Parking Structure	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1.13	18
Total	26	15	15	21	17	18	21	17	15	17	18	15	17	15	17	18	17.63	282

## OBSERVATION 2 FOR APAPA

City Elements	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	MEAN	SUM
Housing Variety	2	2	1	2	2	3	2	2	2	2	2	2	2	2	2	2	2.00	32
Building conditions	3	2	2	3	3	3	3	3	2	3	3	3	3	3	3	3	2.81	45
Order, harmony	2	1	1	2	1	2	2	2	1	1	2	2	2	1	1	2	1.56	25
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Trees, Parks and Gardens	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1.13	18
Sanitation	2	1	2	2	1	2	2	2	1	1	1	1	1	1	1	1	1.38	22
Condition of drainages	3	1	2	3	1	2	2	2	1	1	1	1	1	1	1	2	1.56	25
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Condition of Road network	2	2	2	3	2	3	1	2	2	1	2	1	2	2	2	2	1.94	31
Traffic Flow	1	1	1	3	1	1	2	2	1	2	2	1	1	1	1	1	1.38	22
Parking Structure	2	1	1	1	1	1	1	1	1	2	1	1	1	1	2	1	1.19	19
Total	21	14	15	22	15	20	19	19	14	16	17	15	16	15	16	17	16.94	271

## OBSERVATION 3 FOR APAPA

City Elements	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	MEAN	SUM
Housing Variety	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2.00	32
Building conditions	3	2	2	3	3	3	3	2	3	3	3	3	3	3	3	3	2.81	45
Order, harmony	2	1	1	2	1	2	2	1	1	1	3	2	2	1	1	2	1.56	25
Open Spaces	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Trees, Parks and Gardens	3	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1.19	19
Sanitation	2	1	1	2	1	2	2	2	2	2	2	1	1	1	1	2	1.56	25
Condition of drainages	3	1	1	2	1	2	2	2	1	1	2	1	1	1	1	2	1.50	24
Ped / non-motorised Fac.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	16
Condition of Road network	3	2	2	3	1	2	3	2	2	2	1	1	1	1	1	1	1.75	28
Traffic Flow	2	1	1	2	1	2	3	2	1	2	1	1	2	1	2	1	1.56	25
Parking Structure	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1.06	17
Total	23	14	14	20	14	19	22	17	16	18	18	15	16	14	15	17	17.00	272

## OBSERVATION 1 FOR VICTORIS ISLAND

City Elements	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	MEAN	$\Sigma$
Housing Variety	1	1	1	1	1	1	1	1	1	1	1	1.00	11
Building conditions	3	4	3	4	4	4	3	4	3	3	4	3.55	39
Order, harmony	3	3	3	3	3	3	3	3	3	3	3	3.00	33
Open Spaces	1	1	1	1	1	2	1	1	1	1	2	1.18	13
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1.00	11
Sanitation	2	2	2	2	2	2	2	2	2	2	2	2.00	22
Condition of drainages	2	2	2	3	3	1	2	3	2	2	1	2.09	23
Ped / non-motorised Fac.	2	1	1	2	2	2	1	1	1	1	2	1.45	16
Condition of Road network	2	3	3	3	3	3	2	3	3	3	3	2.82	31
Traffic Flow	2	2	2	2	2	1	1	1	1	2	1	1.55	17
Parking Structure	1	2	1	1	1	1	1	1	1	2	1	1.18	13
Total	20	22	20	23	23	21	18	21	19	21	21	20.82	229

## OBSERVATION 2 FOR VICTORIS ISLAND

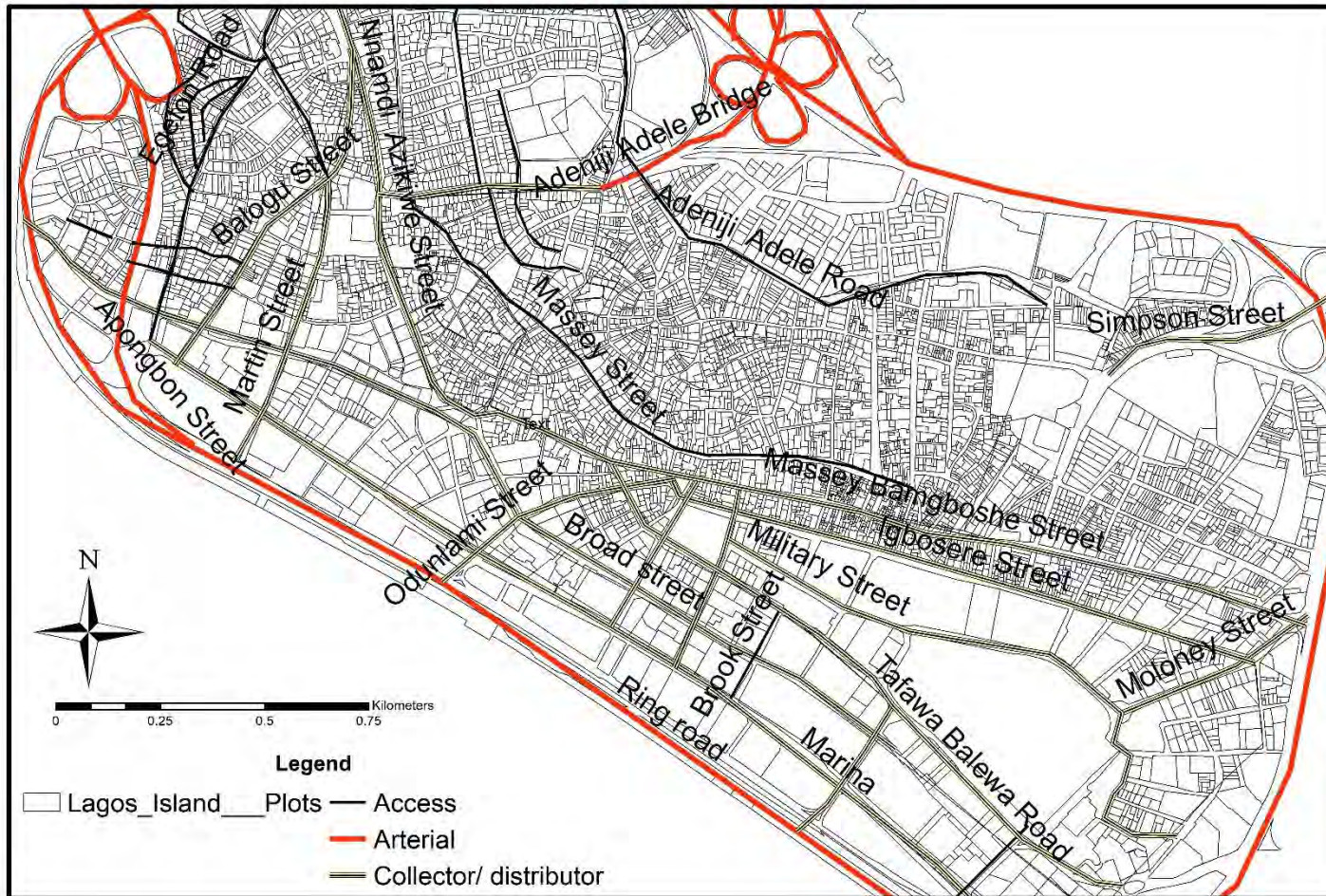
City Elements	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	MEAN	$\Sigma$
Housing Variety	1	2	1	2	1	2	2	1	1	1	2	1.45	16
Building conditions	4	4	4	4	4	4	4	4	4	4	4	4.00	44
Order, harmony	3	2	2	3	2	3	2	2	2	2	2	2.27	25
Open Spaces	1	1	1	1	1	2	1	1	1	1	1	1.09	12
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1.00	11
Sanitation	2	2	2	3	2	2	2	3	2	3	2	2.27	25
Condition of drainages	2	2	2	3	2	1	2	2	2	2	2	2.00	22
Ped / non-motorised Fac.	1	1	1	2	2	1	1	1	1	1	1	1.18	13
Condition of Road network	2	3	4	3	3	3	2	3	3	3	3	2.91	32
Traffic Flow	2	2	2	2	2	1	1	1	1	2	2	1.64	18
Parking Structure	1	2	1	1	1	1	1	1	1	2	2	1.27	14
Total	20	22	21	25	21	21	19	20	19	22	22	21.09	232

## OBSERVATION 3 FOR VICTORIS ISLAND

City Elements	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	MEAN	$\Sigma$
Housing Variety	1	1	1	1	1	1	1	1	1	1	1	1.00	11
Building conditions	4	4	3	4	4	4	3	4	4	4	4	3.82	42
Order, harmony	2	2	2	3	2	3	3	3	2	2	3	2.45	27
Open Spaces	1	2	1	1	1	2	1	1	1	1	2	1.27	14
Trees, Parks and Gardens	1	1	1	1	1	1	1	1	1	1	1	1.00	11
Sanitation	2	2	2	3	3	2	2	2	2	2	2	2.18	24
Condition of drainages	3	3	2	3	3	2	2	3	2	2	2	2.45	27
Ped / non-motorised Fac.	1	1	1	2	2	2	1	1	1	1	2	1.36	15
Condition of Road network	2	3	3	3	3	3	2	3	3	3	3	2.82	31
Traffic Flow	2	2	2	2	2	1	2	1	2	2	1	1.73	19
Parking Structure	1	2	1	1	1	1	1	1	1	2	1	1.18	13
Total	20	23	19	24	23	22	19	21	20	21	22	21.27	234

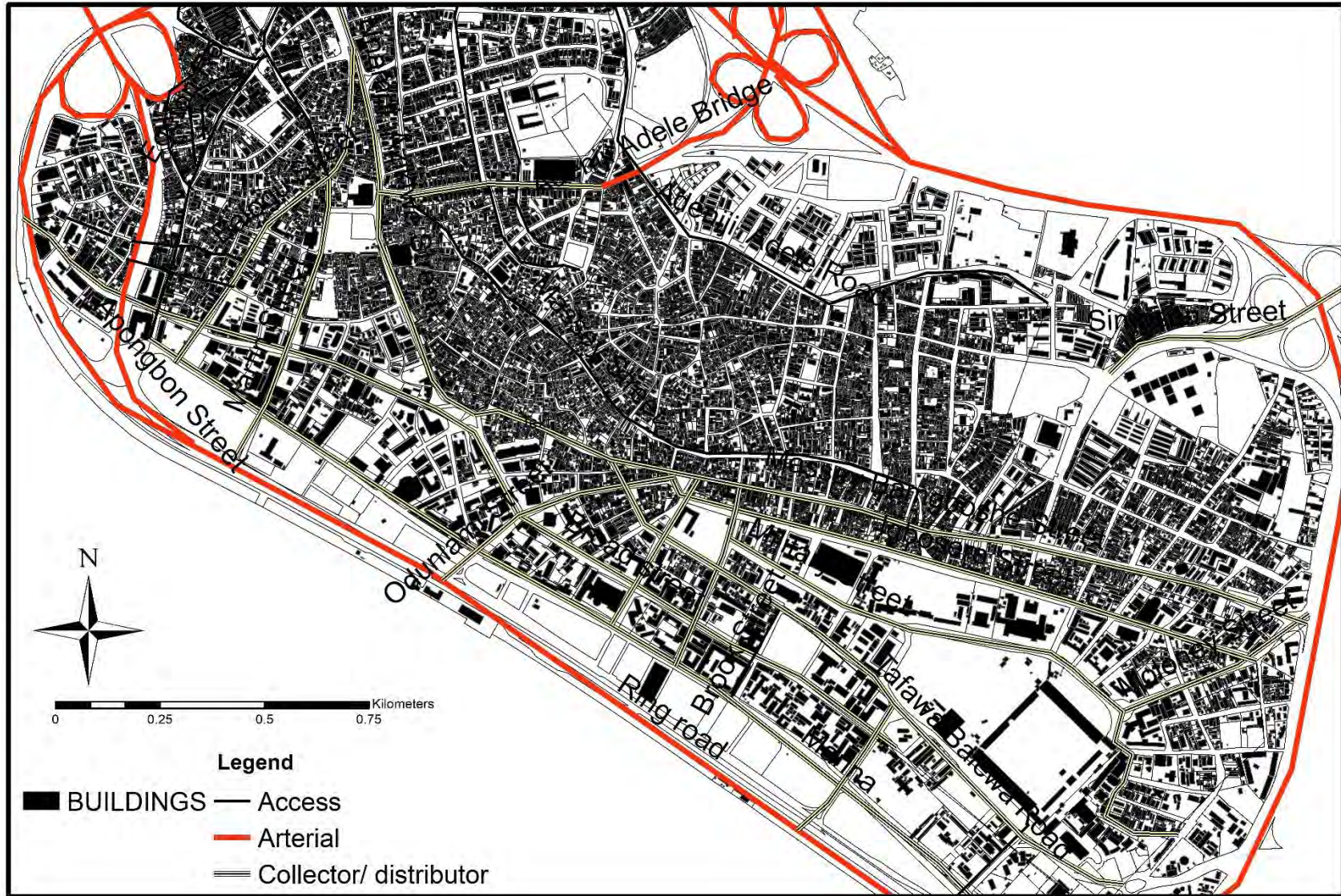
### Appendix 3: MAPS

#### PLOT LAYOUT OF LAGOS ISLAND





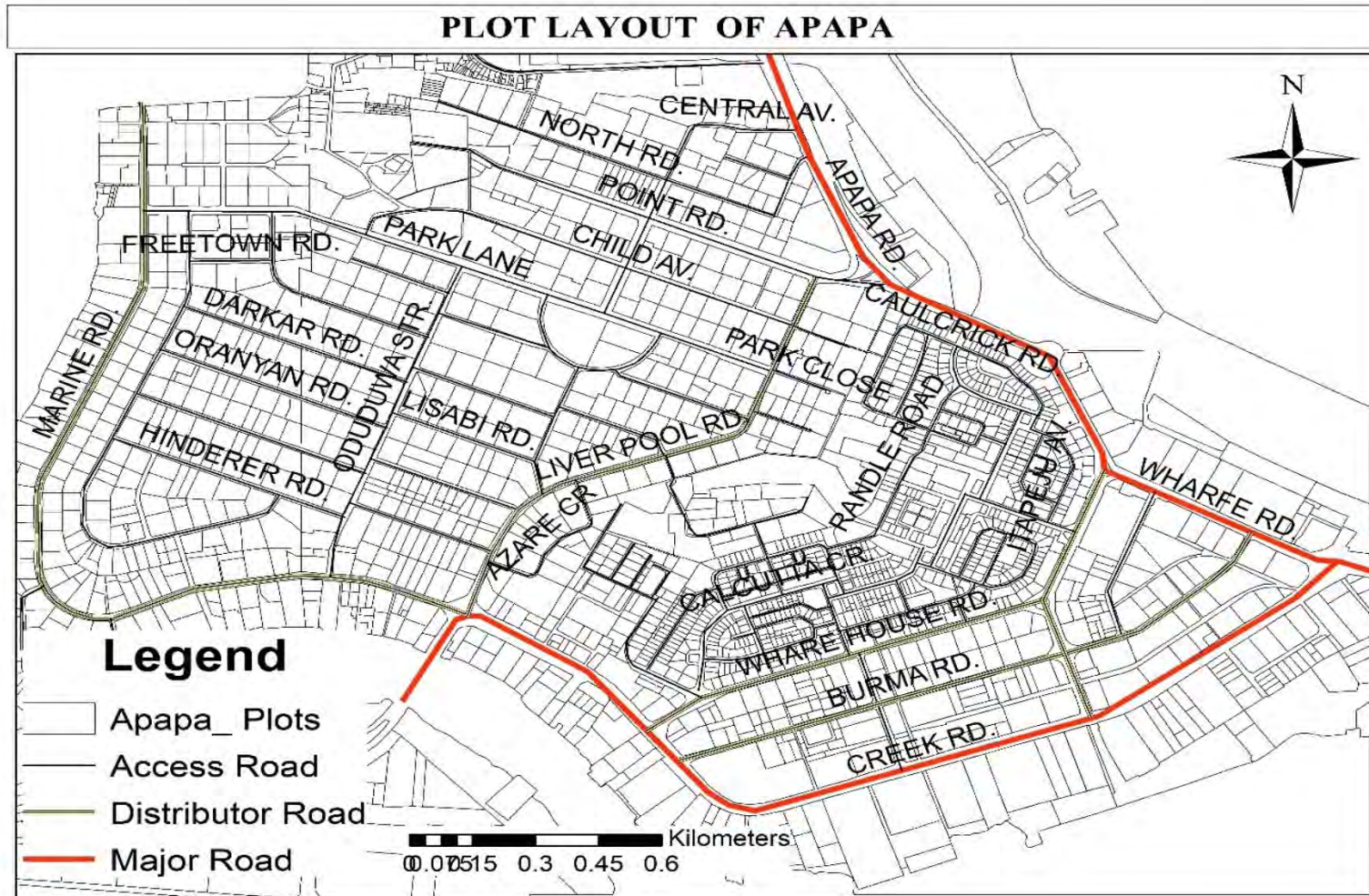
# BUILDING PATTERN OF LAGOS ISLAND





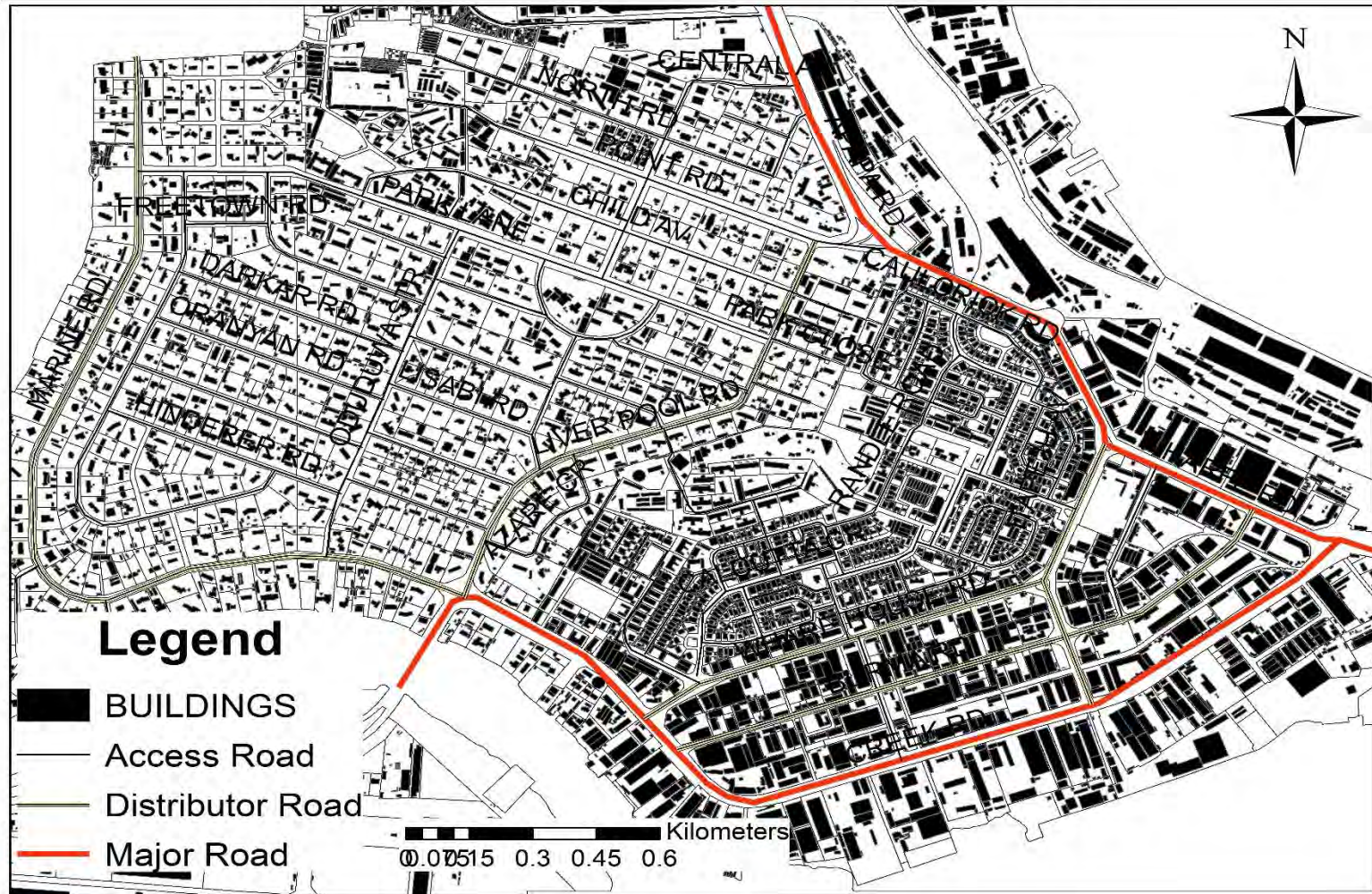






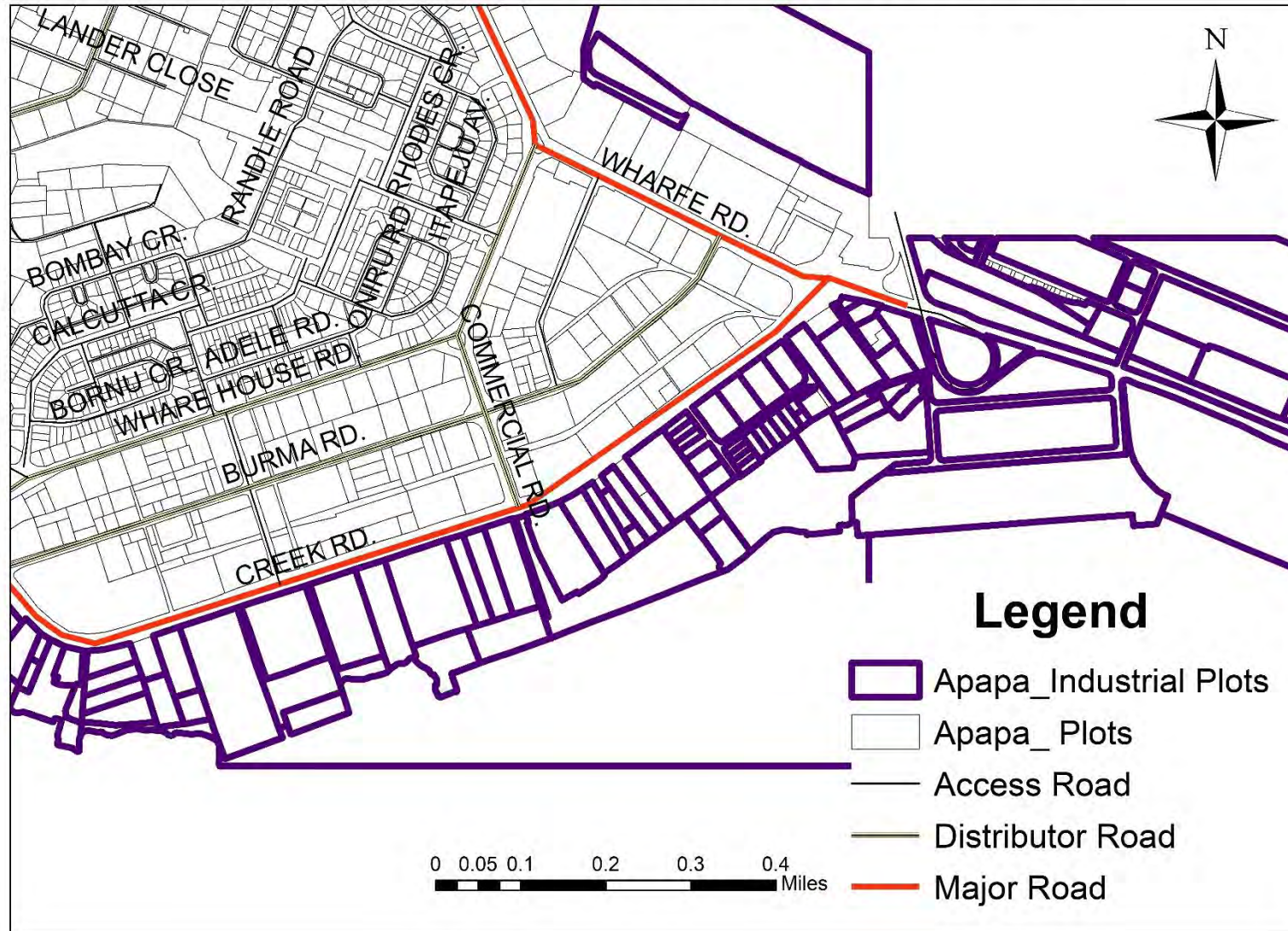


## DEVELOPMENT PATTERNS OF APAPA PORT CITY

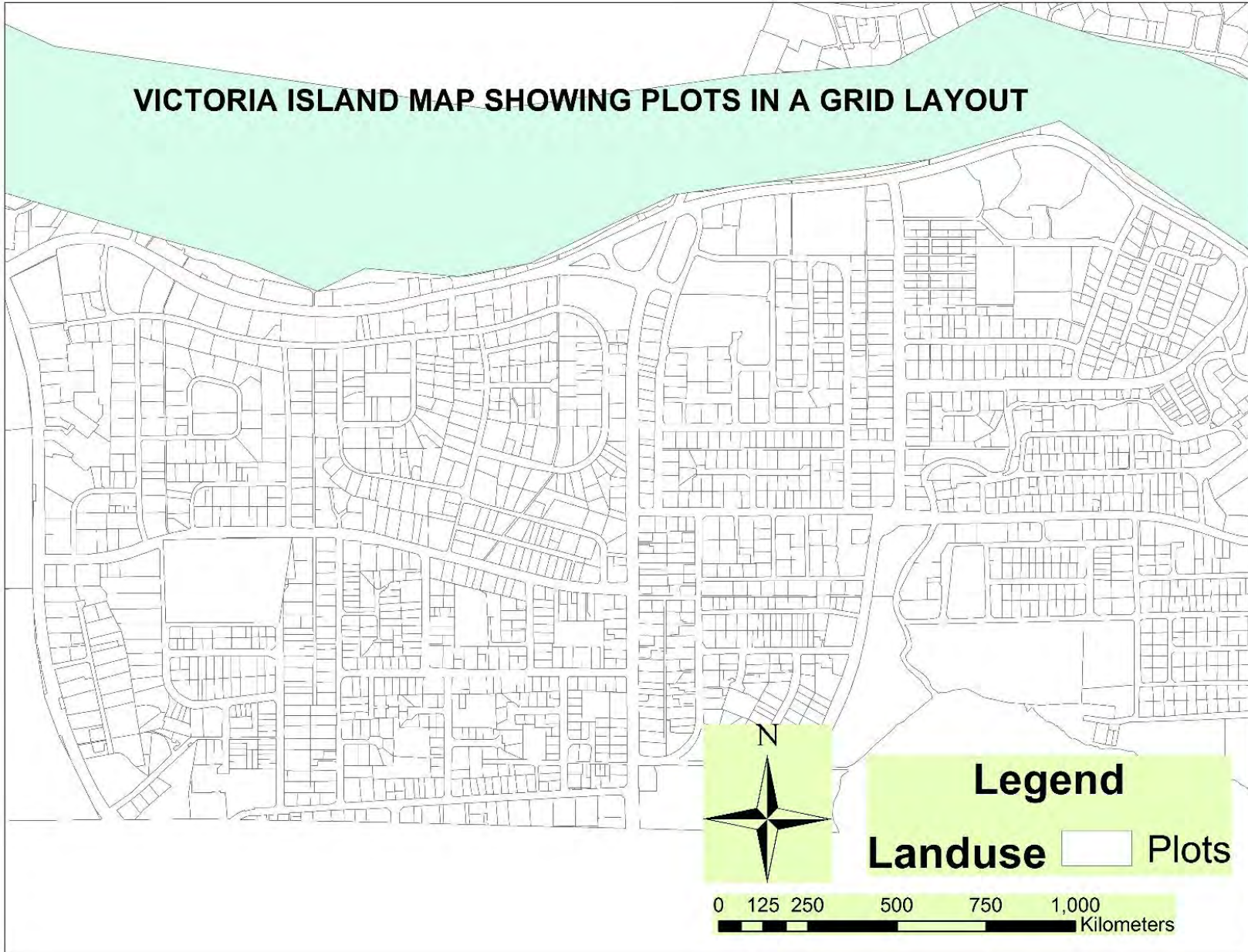




# PLOT LAYOUT OF APAPA SHOWING INDUSTRIAL AREA

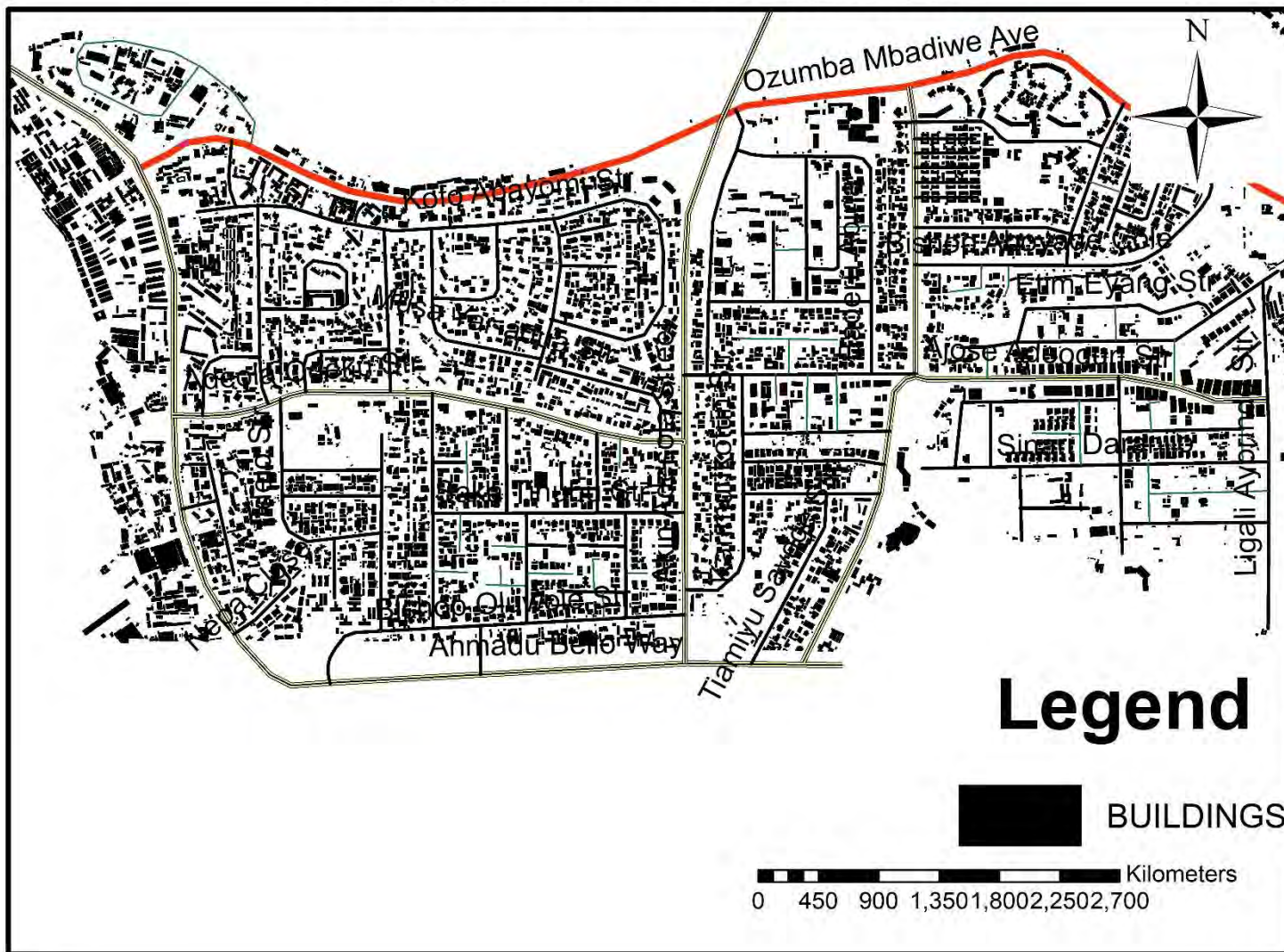


# VICTORIA ISLAND MAP SHOWING PLOTS IN A GRID LAYOUT





# BUILDING LAYOUT OF VICTORIA ISLAND



## Appendix 4: REQUENCY TABLES

### Study Areas

	Frequency	Percent	Valid Percent	Cumulative Percent
Apapa L.G.A.	114	30.5	30.5	30.5
Lagos Island L.G.A.	105	28.1	28.1	58.6
Eti-Osa L.G.A.	155	41.4	41.4	100.0
Total	374	100.0	100.0	

### Age Distribution of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 35 Years	12	3.2	3.2	3.2
36 - 45 Years	67	17.9	17.9	21.1
46 - 55 Years	145	38.8	38.8	59.9
56 - 65 Years	93	24.9	24.9	84.8
Above 65 Years	57	15.2	15.2	100.0
Total	374	100.0	100.0	

### Employment Status of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	336	89.8	89.8	89.8
No	38	10.2	10.2	100.0
Total	374	100.0	100.0	

### Employment Sector of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Public Service	103	27.5	27.5	27.5
Private Company	146	39.0	39.0	66.6
Self Employment	88	23.5	23.5	90.1
Unemployed	37	9.9	9.9	100.0
Total	374	100.0	100.0	

### Monthly Income of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Below N18,000	7	1.9	2.1	2.1
N18,000 - 36,000	32	8.6	9.5	11.6
N36,000 - 72,000	136	36.4	40.4	51.9
N72,000 - 144,000	87	23.3	25.8	77.7
N144,000 and above	75	20.1	22.3	100.0
Total	337	90.1	100.0	
Missing System	37	9.9		
Total	374	100.0		

### Educational Qualifications of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
No Formal Education	3	.8	.8	.8
Primary Education	7	1.9	1.9	2.7
Secondary Education	56	15.0	15.0	17.6
NCE/OND	25	6.7	6.7	24.3
HND/B.Sc.	229	61.2	61.2	85.6
Post Graduate	54	14.4	14.4	100.0
Total	374	100.0	100.0	

### Respondents Years of Residence

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
1 - 5 Years	43	11.5	11.5	11.5
5 - 10 Years	79	21.1	21.1	32.6
More than 10 Years	252	67.4	67.4	100.0
Total	374	100.0	100.0	

### Respondents Household Size

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
1 - 3 Persons	35	9.4	9.4	9.4
3 - 6 Persons	265	70.9	70.9	80.2
7 - 9 Persons	60	16.0	16.0	96.3
Above 9 Persons	14	3.7	3.7	100.0
Total	374	100.0	100.0	

**Respondents Access to Mortgage Facility**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	145	38.8	38.8	38.8
Valid No	229	61.2	61.2	100.0
Total	374	100.0	100.0	

**Respondents Mortgage Facility Benefit**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	35	9.4	24.1	24.1
Valid No	110	29.4	75.9	100.0
Total	145	38.8	100.0	
Missing System	229	61.2		
Total	374	100.0		

**Respondents Mortgage Facility Non Benefit Reason**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No Idea about Mortgage	21	5.6	9.2	9.2
Valid Not Interested	43	11.5	18.8	27.9
Valid Not Needed to Build House	11	2.9	4.8	32.8
Valid Demand too High (Loan Requirements & Criteria)	105	28.1	45.9	78.6
Valid Not Accessible	24	6.4	10.5	89.1
Valid Own a House Already	25	6.7	10.9	100.0
Total	229	61.2	100.0	
Missing System	145	38.8		
Total	374	100.0		

**Respondents Understanding of Development of Approval**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	295	78.9	78.9	78.9
Valid No	79	21.1	21.1	100.0
Total	374	100.0	100.0	

### Knowledge of Where and How of Building Plan Approval

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	298	79.7	79.7	79.7
Valid No	76	20.3	20.3	100.0
Total	374	100.0	100.0	

### Knowledge of Building Plan Approval Requirements

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	277	74.1	74.1	74.1
Valid No	97	25.9	25.9	100.0
Total	374	100.0	100.0	

### Approval of Building for Development

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	163	43.6	43.6	43.6
Valid No	211	56.4	56.4	100.0
Total	374	100.0	100.0	

### Approval Before Development Commencement

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	73	19.5	44.8	44.8
Valid No	90	24.1	55.2	100.0
Total	163	43.6	100.0	
Missing System	211	56.4		
Total	374	100.0		

### Approval Given within Stipulated Time

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	50	13.4	30.7	30.7
Valid No	113	30.2	69.3	100.0
Total	163	43.6	100.0	
Missing System	211	56.4		
Total	374	100.0		

**Development Approval Excess Time**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Two Weeks	12	3.2	10.6	10.6
	One Month	19	5.1	16.8	27.4
	Two Months	12	3.2	10.6	38.1
	Three Months	13	3.5	11.5	49.6
	Over Three Months	57	15.2	50.4	100.0
	Total	113	30.2	100.0	
Missing System	261	69.8			
Total	374	100.0			

**Approval Charges/Fees Opinion of Respondents**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Appropriate	10	2.7	6.1	6.1
	Moderate	79	21.1	48.5	54.6
	Exorbitant	74	19.8	45.4	100.0
	Total	163	43.6	100.0	
Missing System	211	56.4			
Total	374	100.0			

**Difference between Approval Charges and Payments Made**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	121	32.4	74.2	74.2
	No	42	11.2	25.8	100.0
	Total	163	43.6	100.0	
Missing System	211	56.4			
Total	374	100.0			

**Respondents Development Charges Payments Receipt**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	120	32.1	32.1	32.1
	No	254	67.9	67.9	100.0
	Total	374	100.0	100.0	



**Hidden Charges Occurrence**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	278	74.3	74.3	74.3
Valid No	96	25.7	25.7	100.0
Total	374	100.0	100.0	

**Existing Development Changes Occurrence**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	287	76.7	76.7	76.7
Valid No	87	23.3	23.3	100.0
Total	374	100.0	100.0	

**Respondents Existing Development Changes Approval**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	109	29.1	38.0	38.0
Valid No	178	47.6	62.0	100.0
Total	287	76.7	100.0	
Missing System	87	23.3		
Total	374	100.0		

**Planning Authority Actions for Non-Development Approval**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	117	31.3	65.7	65.7
Valid No	61	16.3	34.3	100.0
Total	178	47.6	100.0	
Missing System	196	52.4		
Total	374	100.0		

**Occurrence of Enforcement during Building Process**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	33	8.8	8.8	8.8
Valid Yes	341	91.2	91.2	100.0
Total	374	100.0	100.0	

**Contravention Notice**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	6	1.6	100.0	100.0
Missing System	368	98.4		
Total	374	100.0		

**Stop Work Order**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	1	.3	100.0	100.0
Missing System	373	99.7		
Total	374	100.0		

**Quit Notice**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1	.3	100.0	100.0
Missing System	373	99.7		
Total	374	100.0		

**Seal Up Notice**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1	.3	100.0	100.0
Missing System	373	99.7		
Total	374	100.0		

**Regularization Notice**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1	.3	100.0	100.0
Missing System	373	99.7		
Total	374	100.0		

**Demolition Notice**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 0	1	.3	100.0	100.0
Missing System	373	99.7		
Total	374	100.0		

**Respondents Mode of Land Acquisition**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	278	74.3	74.3	74.3
Valid 2	60	16.0	16.0	90.4
Valid 3	36	9.6	9.6	100.0
Total	374	100.0	100.0	

### Respondents Possession of Certification of Occupancy

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	125	33.4	33.4	33.4
Valid No	249	66.6	66.6	100.0
Total	374	100.0	100.0	

### Respondents Use of Property

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Residential	174	46.5	82.1	82.1
Valid Commercial	34	9.1	16.0	98.1
Valid Institutional	3	.8	1.4	99.5
Valid Manufacturing	1	.3	.5	100.0
Valid Total	212	56.7	100.0	
Missing System	162	43.3		
Total	374	100.0		

### Plot Size of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18 by 36 meters (648 sq m)	267	71.4	71.4	71.4
Valid 24 by 36 metres (864 sq m)	76	20.3	20.3	91.7
Valid 30 by 36 metres (1,080 sq m)	31	8.3	8.3	100.0
Total	374	100.0	100.0	

### Percentage of Plot Developed

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 51-60%	98	26.2	26.2	26.2
Valid 61-70%	29	7.8	7.8	34.0
Valid 71-80%	95	25.4	25.4	59.4
Valid 81-90%	152	40.6	40.6	100.0
Total	374	100.0	100.0	

### Respondents Building Floors

	Frequency	Percent	Valid Percent	Cumulative Percent
One	73	19.5	19.5	19.5
Two	156	41.7	41.7	61.2
Three	115	30.7	30.7	92.0
Valid Four	12	3.2	3.2	95.2
Above Four	18	4.8	4.8	100.0
Total	374	100.0	100.0	

### Respondents Views of Lagos Development Pattern

	Frequency	Percent	Valid Percent	Cumulative Percent
Lagos Development Pattern is Haphazard	272	72.7	72.7	72.7
Good but need Improvement	26	7.0	7.0	79.7
Valid There is need for More Infrastructural Facilities	61	16.3	16.3	96.0
Sastisfactory but need more Effective Enforcement and Regulation	15	4.0	4.0	100.0
Total	374	100.0	100.0	

### Planning Agencies Effective in Sustainable Development

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	126	33.7	33.7	33.7
Valid No	248	66.3	66.3	100.0
Total	374	100.0	100.0	

### Lagos Metropolis Planning Regulations Effective

	Frequency	Percent	Valid Percent	Cumulative Percent
Not Effective	158	42.2	42.2	42.2
Valid Grossly Ineffective	105	28.1	28.1	70.3
Fairly Effective	100	26.7	26.7	97.1
Very Effective	11	2.9	2.9	100.0
Total	374	100.0	100.0	

**Public Participation Adequate in Urban Planning**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	94	25.1	25.1	25.1
Valid No	280	74.9	74.9	100.0
Total	374	100.0	100.0	

**Adequacy of Land Utilization**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	106	28.3	28.3	28.3
Valid No	268	71.7	71.7	100.0
Total	374	100.0	100.0	

**Respondents Willingness on Partnership with Landowners and Developers**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	76	20.3	20.3	20.3
Valid No	298	79.7	79.7	100.0
Total	374	100.0	100.0	

**Reason for Respondents Partnership Willingness or Non-Willingness**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not Interested	51	13.6	13.6	13.6
Valid Lack of Sincerity	12	3.2	3.2	16.8
Valid Not Necessary	25	6.7	6.7	23.5
Valid Difficulty in Partnership	226	60.4	60.4	84.0
Valid Provides Need Fund for Development	60	16.0	16.0	100.0
Total	374	100.0	100.0	

**Respondents Recommendations on Lagos Metropolis Urban Planning and Development**

	Frequency	Percent	Valid Percent	Cumulative Percent
Construction of More Housing Units	22	5.9	5.9	5.9
Monitor the activities of Land Owners	42	11.2	11.2	17.1
Proper Implementation of Various Plans produced in the State	163	43.6	43.6	60.7
Valid Government should focus also on the City Outskirt	21	5.6	5.6	66.3
Ensure Effective Development Control	66	17.6	17.6	84.0
Review of Development/Building Approval Process	60	16.0	16.0	100.0
Total	374	100.0	100.0	

## Appendix 5: Ethical Clearance



**UNIVERSITY OF  
KWAZULU-NATAL**  
IN IZINYEZI  
YAKWAZULU-NATALI

24 October 2017

Mrs Nd Agamah 331560793  
School of Built Environment and Development Studies  
Howard College Campus

Dear Mrs Agamah

Reference Number: HSA/2017/2312  
Project Title: City morphology and sustainable development with affordable control mechanism: A case study of  
Lagos, Nigeria

**Full Approval – Expedited Approval**

In response to your application received 3 May 2017, the Humanities & Social Sciences Research Ethics Committee has  
considered the submitted application and has (pending full) been granted **FULL APPROVAL**.

Any alteration(s) to the approved research protocol (i.e. conditions of research/ subjects, informed consent form, Title of the Project, Location of the Study, Research Approach and Method) must be reviewed and approved through the approval/ re-approval process prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the institution's equipment for a period of 5 years.

The initial clearance certificate is only valid for a period of 3 years from the date of issue. Renewal/ re-approval must be applied for on an annual basis.

I hold full ownership of everything you everything of the book with your data.

*[Signature]*  
Dr. Suresh Singh (Chair)  
Humanities & Social Sciences Research Ethics Committee

cc: Deputy Chair: Prof. Arshad Ali Khan  
cc: Academic Liaison Projects: Prof. Chumiso Mupfema  
cc: School Administration: Ms. Mphahlele Mokoena

Humanities & Social Sciences Research Ethics Committee  
Dr. Suresh Singh (Chair)  
Howard Campus, Mount Moorosi Building  
Private Bag 90112, Durban 4001

Telephone: +27 31 260 1111 | Fax: +27 31 260 1111 | Email: [ethics@ukzn.ac.za](mailto:ethics@ukzn.ac.za) | [www.ukzn.ac.za](http://www.ukzn.ac.za)

   
UNIVERSITY OF KWAZULU-NATAL

 Howard  Mount Moorosi  Nelson Mandela  Pietermaritzburg  Durban



LAGOS STATE GOVERNMENT

11<sup>th</sup> October, 2017

Agamleh Franca Unekwu,  
School of Environment Studies,  
Department of Urban & Reg. Planning,  
Yaba College of Technology,  
Yaba, Lagos.

RE: APPLICATION TO CONDUCT INTERVIEW WITH AGENCIES OF THE MINISTRY

I am directed to refer to your application dated 13<sup>th</sup> September, 2017 on the above subject and to convey the Permanent Secretary's approval for you to conduct interview and collect information/data for your Ph.D thesis titled "City Morphology and Sustainable Development with Effective Control Mechanisms: A Case Study of The Lagos Metropolis"

2. The scope of the interview must be within the interview guide submitted and conducted in 5 (five) Agencies under the Ministry:

- i. Lagos State Physical Planning Permit Authority (LASPPFA)
- ii. Lagos State Building Control Agency (LASBCA)
- iii. Lagos State Urban Renewal Agency (LASURA)

3. Please note that the Ministry would expect to receive a report of the outcome of the research work.

4. You are to inform the Permanent Secretary timely on the commencement and completion of the exercise.

5. Whilting you best of luck.

D.O. Sani (Mrs.)  
For: Permanent Secretary

CC:  
Professor Anthony A. Adeniyi  
Emeritus Professor of Architecture,  
School of Built Environment and Development Studies,  
University of Kwa-Zulu-Natal,  
South Africa.

Also for your information, please.

D.O. Sani (Mrs.)  
For: Permanent Secretary

MINISTRY OF PHYSICAL PLANNING AND URBAN DEVELOPMENT

Plot 13, The Discovery Estate, 1st Floor, Ikeja, Lagos, Nigeria  
01-2612200000 / Email: mps@lagos.gov.ng / Website: www.lagos.gov.ng



LAGOS ISLAND LOCAL GOVERNMENT

DEPARTMENT OF AGRIC, RURAL AND SOCIAL DEVELOPMENT

CITY HALL, LAGOS (P.M.B. 3025) LAGOS, NIGERIA

LAGOS

LAGOS

LAGOS

4<sup>th</sup> October, 2017

TO: THE HEAD OF DEPARTMENT  
URBAN AND REGIONAL PLANNING  
SCHOOL OF BUILT ENVIRONMENT & DEV. STUDIES  
UNIVERSITY OF KWA-ZULU-NATAL,  
SOUTH AFRICA

ATTENTION: MS AGAMAH FRANCA UNEKWU  
MATRIC NO: 211300773

Sir,

LETTER OF ACCEPTANCE TO ADMINISTER QUESTIONNAIRES FOR PHD RESEARCH  
THESIS IN LAGOS ISLAND LOCAL GOVERNMENT AREA

I am directed to inform you that the bearer, MS AGAMAH FRANCA UNEKWU with student No: 211300773, is free to carry out the administration of questionnaires for her PHD Thesis in Lagos Island Communities through the office of the Chairman Lagos Island Local Government Community Development Coordinating Committee.

Thanks

DROMARINDE O.O. (ACCDC)  
For: HOD Agric & Social Services



**IRU-VICTORIA ISLAND LOCAL COUNCIL DEV. AREA  
COMMUNITY DEVELOPMENT COMMITTEE**

Further Communications  
Should be addressed to  
The CDC Chairman



1-7, Muri Okunola Street,  
Victoria Island,  
Lagos State.  
Tel: 07028861240

1<sup>st</sup> October, 2017

Ajannah Francis Umkweu  
Dept of Architecture, Planning and Housing  
School of Built Environment and Development Studies  
University of Kwa Zulu-Natal, Howard Campus  
Durban-South Africa

Dear Ma,

**APPLICATION TO CONDUCT SURVEY ON COMMUNITY BASED ORGANIZATION  
IN VICTORIA ISLAND LCDA**

With reference to your letter dated 28<sup>th</sup> September, 2017, requesting to administer semi-structured questionnaires to the members of the community based organization under my jurisdiction towards the completion of your PhD Thesis titled "City Morphology and Sustainable Development With Effective Control Mechanism – A case Study of Lagos Metropolis", I am pleased to give full Consent/Approval on the above application within the anticipated study period.

The communities under my supervision are 21 in number that are fully Registered as CDA; Community Development Association. Monthly meetings are held every last Friday of every month.

The Victoria Island LCDA is a pioneer LCDA because we have communities on the Riverine and upland in Victoria Island 6 and 13 communities respectively.

Your request is given a favourable and cordial attention.



**COMMUNITY DEVELOPMENT COMMITTEE**

— APAPA CHAPTER —

14/21, Ibeju-Lagos Road, Apapa, Lagos State  
Tel: 08162111000, 0816211000, 0816211540, 0816211000  
Email: apapacdc@apapa.com

6<sup>th</sup> OCT, 2017

Ajannah Francis Umkweu  
Dept of Architecture, planning & Housing  
School of Built Environment and Development studies  
University of Kwa Zulu-Natal, Howard Campus  
Durban, South Africa.

Dear Ma,

**APPROVAL TO CONDUCT SURVEY FOR PHD RESEARCH.**

Reference to your letter dated 23<sup>rd</sup> Sept, 2017 requesting for survey to administer semi-structured questionnaire to the members of community development association, a based community organization under your study area towards the completion of your PhD research titled, "City Morphology and Sustainable Development with Effective Control Mechanism" A Case Study of the Lagos Metropolis.

The application was considered at the last meeting and thereby given approval to proceed for the exercise; while we will be ready to co-operate with you in all ramifications.

Thanks,

Yours in Community Service

BOLAJI LAJA  
CHAIRMAN C.D.C.  
081602338425  
DATE:

## **Appendix 6: Informed consent for conducting interview with key informants in Lagos State Ministry of Physical Planning Agencies**



**Title of study:** Morphology Planning and Effective Control Mechanisms: Towards Land Use Optimization and Sustainable Development: A Case Study of Lagos Mega City”.

**Researcher:** Agamah Franca Unekwu  
Department: Architecture, Planning and Housing  
University of KwaZulu-Natal, Durban, South- Africa  
Phone: + 2348033926065  
E-mail:[211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za), [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com)

Dear Sir/ Madam

### **Self/Research Introduction**

My name is Agamah, Franca U, a PhD candidate of the Department of Town and Regional Planning, School of the Built Environment and Development Studies, University of KwaZulu- Natal, Howard campus, South Africa. I am currently carrying out a research titled “**City Morphology Planning and Effective Control Mechanisms: Towards Land Use Optimization and Sustainable Development: A Case Study of Lagos Mega City**”; supervised by Professor Ambrose A. Adebayo.

The research aims to study the morphology of the metropolitan Lagos and to examine the changes in land use and the causes to develop a model for a sustainable compact city that will put Lagos on maps on which it belongs; that of worlds metropolitan and port cities and especially with the standards and attributes of vibrant mixed use smart cities.

### **Procedure, Risks, Benefits, Confidentiality and Contacts**

The study proposes a triangulated mixed method involving three areas in the mega city, Lagos Island, Apapa and Victoria Island; field reconnaissance, administer questionnaires to property owners and conduct Interviews with planners in study area respectively.

This process involves an outlined set of detailed yet simply set questions that will assist with information that the researcher will work with. You are kindly requested to help in providing answers to all the questions where applicable by discussing your answer based on your understanding of the question.

The research is transparent, purely academic and has no economic or other motives; it is not being sponsored by any non- academic institution private or public; hence no hidden agenda. All responses to this survey will be treated as highly confidential. With highest confidence, none of the solicited information will hurt or work against any one.

All mandatory ethical procedure will be duly enforced. Participation will take an average time of 35 minutes, it is voluntary hence you have the right to withdraw responses or even decline if you so desires, there will be no financial gain or benefits for participants and well as any loses if you decline, however your contribution will be contributing to knowledge by way of authenticating literature and helping towards planning a sustainable Lagos, a plan which may be also adopted to other metropolitan cities.

All data, Soft and hard copies will be securely stored in prescribed university repositories; the University Center for Information Technology and Management and locked file cabinet of the researcher respectively. Hard copies will be disposed by shredding after five years.

The researcher will carry you along on the progress of the work and will not hesitate to brief you on the outcome if the need arises. If you desire further enquiries about this study, contact Research Ethics on HSSREC @ ukzn.ac.za or the researcher on +2348033926065; [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com); [211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za) respectively.

**Consent:** Signing this consent form is a confirmation that you have been briefed and that you understand the study is for an academic research for a PhD degree.

I have been implored to answer questions about the study to the best of my knowledge as may be applicable without any potential risks as a result of my participation.

I understand my participation is voluntary, devoid of monetary gains or losses and I have the right to withdraw at any point of the process without any consequences or conditions attached. I understand that if I may have any queries or need for further enquiries about this study, I can contact the researcher on +2348033926065; [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com); [211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za). or the Research Ethics Administration on Tel: 27312604557 – Fax: 27312604609; E-mail: HSSREC @ ukzn.ac.za

## **Appendix 7: Guide Line Questions for Interview with Director LASPPA, Ministry of Physical Planning and Urban Development**



**Title of study:** CITY MORPHOLOGY PLANNING AND EFFECTIVE CONTROL MECHANISMS:  
TOWARDS LAND USE OPTIMIZATION AND SUSTAINABLE DEVELOPMENT:  
A CASE STUDY OF LAGOS MEGA CITY

### **Functions of Agency**

1. What are the primary functions of the agency?
2. Are there any forms of interaction and collaboration between the agency and other agencies in the ministry? If any, please elaborate.
3. The agency is empowered by law to draft plans; what physical developments plans prepared and implemented by the agency are known to you?
4. Please indicates how these plans aid your functions of controlling physical development in Lagos State? Are you satisfied with the outcomes of development and performance of the ministry?
5. Are these plans reviewed and updated regularly? please comment on other strategies adopted towards achieving sustainable development

### **Planning /development approvals**

6. Why is development approval necessary before carrying out any form of development?
7. What are the criteria or requirements for application and obtaining a development approval
8. What are the processes of application for a development approval,
9. What is/are the procedure/conditions for issuing a building plan approval and challenges involved?
10. Do you have the record of building plan application and approvals in the state?
11. Do you have up to date information of development status in the Lagos Mega City?
12. What happens to developments without approval
13. Are there any data base for property owners?

### **Working Tools and Mechanisms**

14. What are the tools available to the agency for implementing its duties
15. How effective are these tools to urban planning?

16. How is monitoring of physical development activities carried out by the agency?
17. How do you get data or maps you use for the implementation of your duties?
18. Do you have access to satellite imageries and other digital data?
19. If no, what are the consequences on development in Lagos State?
20. Do you have physical development guide for the excised communities in Lagos Metropolis?

### **Training and Competence**

21. What training opportunities are available to the agencies?
22. Has this agency organized any training on planning tools application to the staff?

### **Funding and Remuneration**

23. What is the budgetary allocation for the agency?
24. Is this allocation able to cater for the physical planning functions of the agency?
25. If no, what area of the agency functions has been affected by the inadequacy of budgetary allocation?
26. How effective is the agency in revenue generation? Please elaborate.
27. Are the staff and personnel of the agency well remunerated?

### **Land Utilization and Urban Forms**

28. Who is responsible for the determination of FAR and density specification
29. Are there any documents stipulating these standards for the state?
30. On what grounds are approval given to developers with regards to building type, and density ( dwelling units)
31. In your opinion considering land value, growing economy and urban functions of the metropolis would say that land is adequately utilized in the metropolis
32. Are contemporary planning/development approaches (i.e. sustainable city development, compact city) integrated in the agency physical planning functions?

### **Land use planning and administration in Lagos metropolis**

33. Do you think that the planning agencies are doing enough in the state towards having sustainable development?
34. How effective are the planning regulations in Lagos? What implications do they have on the environment?

35. Would you say that the state of the environment is as a result of failing planning regulations or poor control enforcement? Please elaborate if there are other reasons.

**Operational Challenges of the Agency**

36. Are you satisfied with the achievement of the agency in terms of implementing development plans and enforcing compliance?
37. What are the operational challenges in physical development control?

**Strategies towards Urban Development**

38. Would you say that there is adequate public participation in urban planning? Please state reasons to support your answer.
39. Are there any short terms or long-term plans to address the challenges of uncontrolled physical development in Lagos Metropolis by your agency?
40. Suggest possible solutions towards addressing the challenges of development control and achieving a sustainable Mega City.

**FURTHER COMMENTS AND RECOMMENDATIONS.**

Thank you.

**Appendix 8: Guide Line Questions for Interview with Director Key informant  
LASBCA, Ministry of Physical Planning And Urban Development**

**Title of study:** CITY MORPHOLOGY PLANNING AND EFFECTIVE CONTROL  
MECHANISMS:  
TOWARDS LAND USE OPTIMIZATION AND SUSTAINABLE DEVELOPMENT:  
A CASE STUDY OF LAGOS MEGA CITY



**Functions of Agency**

1. What are the primary functions of the agency?
2. Are there any forms of interaction and collaboration between the agency and other agencies in the ministry? If any, please elaborate.

**Development Control, Working Tools and Mechanisms**

3. What are the criteria for development control?
4. What are the procedures involved in the control of development?
5. How and when do you enforce control?
6. At what stage of development is control most appropriate?
7. What is the situation at hand?
8. Do you have the record of building approvals in the state?
9. Do you have a database for contraventions in the state? How do you come about this data?
10. What actions are being taken on these and what is the success rate?
11. Do you have up to date information of development status
12. Do you have access to data base for property owners?

**Working Tools and Mechanisms**

13. What are the tools available to the agency for implementing its duties
14. How effective are these tools to development control?
15. How is physical development control and monitoring activities carried out by the agency?
16. Is the agency empowered by law to draft plans?
17. Please indicate how these plans aid your functions of controlling physical development in Lagos State? Elaborate if otherwise.
18. Are these plans reviewed and updated regularly? please comment on other strategies adopted towards achieving sustainable development
19. How do you get data or maps you use for development control?
20. Do you have access to satellite imageries and other digital data?
21. If no, what are the consequences on development control in Lagos State?

**Training and Competence**

22. What training opportunities are available to the agencies?
23. Has this agency organized any training on planning tools application to the staff?

24. What is your assessment of the general staff competency level in application of relevant planning tools of the agency?

### **Funding and Remuneration**

25. What is the budgetary allocation for the agency?
26. Is this allocation able to cater for the physical planning and control functions of the agency?
27. If no, what area of the agency functions has been affected by the inadequacy of budgetary allocation?
28. How effective is the agency in revenue generation? Please elaborate.
29. Are the staff and personnel of the agency well remunerated?

### **Land Utilization and Urban Forms**

30. In your opinion considering land value, growing economy and urban functions of the metropolis would say that land is adequately utilized in the metropolis
31. Are contemporary planning/development approaches (i.e. sustainable city development, compact city) integrated in the agency physical planning functions?

### **Land use planning and administration in Lagos metropolis**

32. Do you think that the planning agencies are doing enough in the state towards having sustainable development?
33. How effective are the planning regulations in Lagos? What implications do they have on the environment?
34. Would you say that the state of the environment is as a result of failing planning regulations or poor control enforcement? Please elaborate if there are other reasons.

### **What Are the Operational Challenges of the Agency?**

35. Are you satisfied with the achievement of the agency in terms of controlling development and enforcing compliance?
36. What are the operational challenges in physical development control?

### **Strategies towards Urban Development**

37. Would you say that that there is adequate public participation in urban planning? Please state reasons to support your answer.
38. Are there any short term or long-term plans to address the challenges of uncontrolled physical development in Lagos Metropolis by your agency?
39. Suggest possible solutions towards addressing the challenges of development control and achieving a sustainable Mega City.

### **FURTHER COMMENTS AND RECOMMENDATIONS.**

Thank you.



**Appendix 9: Guide Line Questions for Interview with Key informant Lagos State  
Urban Renewal Authority, (LASURA) Ministry of Physical Planning and  
Urban Development**



CITY MORPHOLOGY PLANNING AND EFFECTIVE CONTROL MECHANISMS:  
TOWARDS LAND USE OPTIMIZATION AND SUSTAINABLE DEVELOPMENT:  
A CASE STUDY OF LAGOS MEGA CITY

**Establishment and Functions of LASURA**

1. When was the Urban Renewal Authority established?
2. What is/are the primary functions of the agency?
3. Are there any forms of interaction and collaboration between the agency and other agencies in the ministry? If any, please elaborate.

**Indices for Measuring Deterioration**

- 4 What are the criteria for urban renewal
- 5 At what stage is urban renewal most appropriate?
- 6 Do you have the record of buildings and environmental status in the state?
- 7 How do you determine a place needs urban revitalization or outright redevelopment?
- 8 Based on your records how many places require your intervention?
- 9 What are the general procedures for urban renewal?
- 10 What actions are being taken on these and what is the success rate?
- 11 Who is responsible for the funding of these recommendations?

**Working Tools, Mechanisms and Access to Data**

- 12 What are the tools available to the agency for implementing its duties
- 13 How effective are these tools to urban renewal?
- 14 Is the agency empowered by law to draft plans? If yes please indicates how these plans aid your functions in Lagos? If no, how do you get data or maps you use for urban renewal?
- 15 Are these plans reviewed and updated regularly? Please comment on other strategies adopted towards carrying out your duties.
- 16 What are the mechanisms for monitoring development by the agency?
- 17 Do you have jurisdiction on the excised communities in Lagos Metropolis?
- 18 Do you have access to satellite imageries and digital data?
- 19 If no, what are the consequences in Lagos State?

**Training and Competence**

- 20 What training opportunities are available to the agencies?
- 21 Has this agency organized any training on planning tools application to the staff?

### **Funding and Remuneration**

- 22 What is the budgetary allocation for the agency?
- 23 Is this allocation able to cater for the functions of the agency? If no, what area of the agency functions has been affected by the inadequacy of budgetary allocation?
- 24 How effective is the agency in revenue generation? Please elaborate?
- 25 Are the staff and personnel of the agency well remunerated?

### **Land Utilization and Urban Forms**

- 26 In your opinion considering land value, growing economy and urban functions of the metropolis would say that land is adequately utilized in the metropolis?
- 27 Are contemporary planning/development approaches (i.e. sustainable city development, compact city) integrated in the agency physical planning functions?
- 28 Please elaborate on sustainable planning approaches for deteriorated areas of the city.

### **Land use planning and administration in Lagos metropolis**

- 29 Do you think that the planning agencies are doing enough in the state towards having sustainable development?
- 30 How effective are the planning regulations in Lagos? What implications do they have on the environment?
- 31 Is the state of the environment as a result of failing planning regulations or poor enforcement? Please elaborate if there are other reasons.

### **What Are the Operational Challenges of the Agency?**

- 32 Are you satisfied with the achievement of the agency in terms of revitalizing deteriorated areas? Please elaborate on your response.
- 33 What are the operational challenges in urban renewal authority?

### **Strategies towards Urban Development**

- 34 Would you say that that there is adequate public participation in urban planning? Please state reasons to support your answer.
- 35 Are there any short terms or long-term plans to address the challenges of deteriorating physical environment and development in Lagos Metropolis by your agency?
- 36 Suggest possible solutions to address the challenges of development towards achieving a sustainable mega city.

### **37 FURTHER COMMENTS AND RECOMMENDATIONS.**

Thank you.

**Appendix 10: Consent to Participate in Research Survey (Questionnaire) For  
Community Development Association**



**Title of study:** “City Morphology and Sustainable Development with Effective Control Mechanism: A Case Study of the Lagos Metropolis”;

**RESEARCHER:** AGAMAH Franca Unekwu  
Department: Architecture, Planning and Housing  
University of KwaZulu-Natal, Durban, South- Africa  
Phone:, + 2348033926065  
E-mail:[211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za), [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com)

The research aims to study the morphology of the metropolitan Lagos and to examine the changes in land use and the causes to develop a model for a sustainable compact city that will put Lagos on maps on which it belongs; that of worlds metropolitan and port cities and especially with the standards and attributes of vibrant mixed use smart cities.

The study proposes a triangulated mixed method involving three areas in the mega city, Lagos Island, Apapa and Victoria Island; field reconnaissance, administer questionnaires to property owners and conduct Interviews with planners in study area respectively.

This process involves an outlined set of detailed yet simply set questions that will assist with information that the researcher will work with. You are kindly requested to help in providing answers to all the questions where applicable by either ticking the appropriate option, or by writing or discussing your answer based on your understanding of the question.

The research is transparent, purely academic and has no economic or other motives; it is not being sponsored by any non- academic institution private or public; hence no hidden agenda. All responses to this survey will be treated as highly confidential. With highest confidence, none of the solicited information will hurt or work against any one.

All mandatory ethical procedure will be duly enforced. Participation will take an average time of 35 minutes, it is voluntary hence you have the right to withdraw responses or even decline if you so desires, there will be no financial gain or benefits for participants and well as any loses if you decline, however your contribution will be contributing to knowledge by way of authenticating literature and helping towards planning a sustainable Lagos, a plan which may be also adopted to other metropolitan cities.

All data, will be securely stored in prescribed university repositories; the University Center for Information Technology and Management and locked file cabinet of the researcher respectively. Hard copies will be disposed by shredding after five years.

If you desire further enquiries about this study, contact Research Ethics on HSSREC @ ukzn.ac.za or the researcher on +2348033926976; [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com); [211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za) respectively.

## CONSENT

I have been informed about the study entitled. **“City Morphology and Sustainable Development with Effective Control Mechanism: A Case Study of the Lagos Metropolis”**

I understand the purpose is for academic research for a PhD degree, I have been implored to answer questions about the study to the best of my knowledge as may be applicable without any potential risks to me as a result of my participation.

I am fully aware that my participation in this study is entirely voluntary, devoid of monetary gains or losses and I have the right to withdraw at any point of the process without any consequences or conditions attached.

I understand that if I may have any queries or need for further enquiries about this study, I can contact the **Research Ethics** or the researcher on +2348033926065; [unekwuagamah@yahoo.com](mailto:unekwuagamah@yahoo.com); [211560773@stu.ukzn.ac.za](mailto:211560773@stu.ukzn.ac.za).

OR

### **HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION**

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban, 4000

Kwazulu-Natal, South Africa

Tel: 27312604557 – Fax: 27312604609

E-mail: HSSREC @ ukzn.ac.za

I hereby give my consent to respond to questionnaires on subject stated above for research purposes. Please sign this form to show that you fully understand your rights of participation.

Signature----- Date-----

**Appendix 11: Questionnaire for Community Development Association-  
(Landlords/Property Owners)**



**NOTE: Please answer the following questions by ticking the relevant answers. The numbers beside the answers are for official use only.**

**Section A: Demographic characteristics of respondent**

1. What is the age of respondent? less than 35 [1] 36-45 [2] 46-55 [3] 56 – 65 [4] Above 65
2. Are you employed? Yes [1] No [2]
3. In which of these sectors are you employed? Public service [1] Private company [2] Self-employment. [3].
4. What is your monthly income {#-Naira} below 18, 000 [1] 18, 000-36, 000 [2] 36, 000-72, 000 [3] 72, 000-144, 000 [4] 144, 000 and above? [5].
5. What is your educational qualification? No formal education [1] Primary [2] Secondary [3] NCE/OND [4] HND/B.Sc. [5] Post Graduate [6]
6. How long have you lived in your place of residence? 1-5 years [ 1] 5- 10 years [2] More than 10 years [ 3]
7. What is your household size? 0-4 [ 1] 4-8 [2] 8-12[ 3]
8. Do you have access to mortgage facility? Yes [1] No [2]
9. If yes have you benefited any mortgage facility Yes [1] No [2]
10. If no, why? -----  
-----

**Section B: Awareness, Development control, approvals, enforcements, compliance & planning**

11. Do you understand the need for an approval to develop? Yes [1] No [2]
12. Do you know where and how to apply for building plan approval? Yes [1] No [2]
13. Do you know the requirements for building planning approvals? Yes [1] No [2]
14. Was your building plan approved for development? Yes [1] No [2]
15. If yes did you get approval before commencing the project? Yes [1] No [2]
16. Was the approval given within the stipulated time given? Yes [1] No [2]
17. If the answer to Q12 is No, please indicate the excess time two weeks [1] one month [ 2] two months [ 3] three months [4] over three months [5]

18. Tick your opinion about approval charges/fees.    Appropriate [1]    Moderate [2]  
 Exorbitant [3]
19. Was there difference between approval charges and payments made?    Yes [1]No [2]
20. Were all payments receipted? Yes [1]                      No [2]
21. Were there other hidden charges? [ 1 ] Yes            [ 2 ] No
22. Have you made changes to your existing development? Yes [1]            No [2]
23. If yes to 22 did you get any approval? Yes [1]            No [2]
24. If no to 22, was there any action by the local planning permit authority? Yes [1] No [2]
25. Was there any enforcement during the building process? Yes [1]            No [2]
26. Is yes state the reasons why -----
27. What are your view(s) about the development patterns of Lagos?  
 .....
- .....

**Section C: Land use planning and administration in Lagos metropolis**

28. Do you think that the planning agencies are doing enough in the state towards having sustainable development? Yes [1]            No [2]
29. How effective are the planning regulations in Lagos? Not Effective [1] grossly ineffective [2] fairly effective [3] very effective [4]
30. Would you say that that there is adequate public participation in urban planning? No [1] Yes [2]
31. Do you think that the available land is adequately used? Yes [1]            No [2]
32. Will you be willing to go into partnerships with other landowners and private developers? [1] Yes [2] No
33. Please state reasons to support your answer for Q38. -----  
 What recommendation(s) would you give on urban planning and development in Lagos metropolis.....  
 .....

Thank you for your cooperation and participation.

**Agamah Franca Unekwu 211560773**